

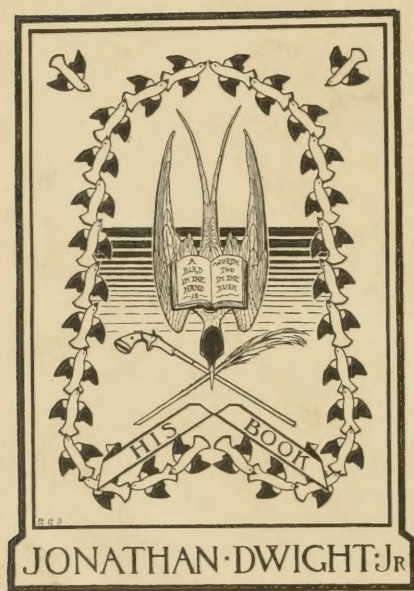
AQUATIC BIRDS

C. J. PATTEN.

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W. D. Latimer, Photo.]

THE BARE SLOB-LANDS AT FIRST EBB.

Crouched on the ooze, watching the approach of an immense flock of shore-birds.

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Birds

THE

AQUATIC BIRDS

OF

GREAT BRITAIN AND IRELAND

BY

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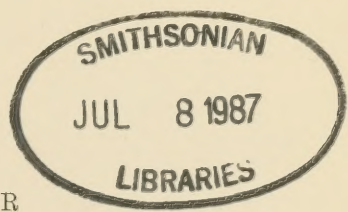
WITH MANY ILLUSTRATIONS

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TO
THE LOVING MEMORY
OF
MY DEAR FATHER
THIS VOLUME
IS
AFFECTIONATELY DEDICATED.

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PREFACE.

THE present volume deals with that large class of birds which, owing to the difficulty of approach occasioned by their aquatic habits, are in many ways not familiar.

Field-work on the Irish coast, carried out during more than twenty years, has been supplemented more recently by investigations into the avifauna of many other districts of the British sea-board, thus enabling descriptions from personal observation to be given of many aspects of bird-life upon which much information is still wanting. To make the accounts given as complete as possible, those sources have been gleaned from which are believed to be trustworthy, and the valuable works and papers of Barrington, Buckley, Evans, Eagle Clarke, Gray, Gurney, Harting, Harvie-Brown, Newton, Salvin, Saunders, Seebohm, Stevenson, Ussher, and Warren, and of many other writers whose names appear in the text, have been laid under contribution.

In the case of nearly every bird reference has been made to coloured figures in standard works. Descriptive Characters have been given under a separate paragraph; the headings Flight, Voice, Food, Nest, and Geographical Distribution, have been italicised to facilitate reference; while at the end of each article Allied Species and Representative Forms are mentioned. The eggs of most species are described with the nests and surroundings; in articles dealing with very rare birds, where the habits are not described and only the occurrences recorded, the colour and number of eggs in the clutch are mentioned under Descriptive Characters. In all cases the size is given under Average Measurements.

The majority of the Plates are original, and include photographic reproductions of birds, nests, and eggs, in their natural haunts; of various aspects of coast-scenery; of mounted specimens, chiefly from my private collection; and of a few drawings in black and white, kindly lent by my Publisher.

For contributions of original photographs I am indebted to Dr. N. H. Alcock, Mr. H. Brooke, Mr. C. B. M. Chambré, Mr. A. D. Delap, Mr. C. D. Head, Mr. W. D. Latimer, Mr. G. W. Nicholson, Mr. F. H. Walker, Mr. R. Welch, Dr. E. P. Wright, and Mr. R. J. Ussher; also to Dr. Wilesworth

for the loan of the blocks which form the subjects of Plates LIV. and LVII.; and to my Publisher for the large number of text-figures that he has kindly inserted, most of which are not only artistically good, but being drawn to scale have considerable scientific value.

Through the kindness of the Editors of the 'Irish Naturalist,' the use of the blocks of the bones of the Great Auk, drawn by Mr. M. Knowles, has been acquired.

I desire to thank Professor Newton, Mr. Howard Saunders, and Mr. Eagle Clarke, for many valuable suggestions and criticisms; Mr. E. Leonard Gill, Mr. Oxley Grabham, Mr. Howarth, Mr. F. R. Rowley, and Dr. Scharff, for the generous and ready assistance which they have afforded me in the examination of museum-specimens; Professor Mackintosh for kindly permitting me to examine and photograph that valuable and interesting specimen—the Great Auk in the Museum of Zoology, Trinity College, Dublin; Mr. Fleming, of Toronto, for allowing me the privilege of examining, from his fine American collection, many interesting examples of allied species and representative forms inhabiting the New World.

To many correspondents, especially to Mr. R. M. Barrington, Mr. J. L. Bonhote, Mr. F. Coburn, Mr. J. H. Gurney, Mr. R. R. Leeper, Mr. W. Milne, Rev. Julian Tuck, Mr. F. H. Walker, Mr. R. Warren, Mr. A. Williams, and Mr. W. J. Williams, my best thanks are due.

To Mr. R. J. Ussher, of co. Waterford, who devoted much time and exceptional care to the revision of the manuscript, and to my wife, who has read every proof-sheet with the utmost care, I feel unable to express my gratitude adequately.

* * * *

I close these Prefatory remarks with a tribute to the memory of Edward Williams, by whose kindly help, this volume has largely benefited.

Many of its pages bear testimony of how valuable and extended were his contributions, while the cordial welcome always received, even during his busiest hours at his work-rooms in Dame Street, Dublin, and the information and assistance so willingly given, will ever be remembered by those who had the privilege of his friendship.

UNIVERSITY, SHEFFIELD.

C. J. PATTEN.

September, 1906.

INTRODUCTION.

THE system of classification followed in the present volume is that which was set forth by Mr. P. L. Selater in the 'Ibis' for 1880, and which has since been adopted by many ornithologists. Classification.

This scheme commences with the **PASSERES**, the most highly specialised of birds, and ends with the **TURBINARES**, which exhibit the nearest affinities to reptiles.

In the selection for treatment of those Orders which include chiefly birds of aquatic habits, it seems inadvisable, from a systematic standpoint, to omit the few species which happen to resort to dry situations. Thus from the Order **GRALLÆ** the Bustards are not excluded; furthermore, considering the affinities of these birds with the **LIMICOLÆ**,—an Order consisting almost entirely of birds structurally adapted for a more or less aquatic life—their admission to the text would appear all the more desirable. But on the other hand the Order **PASSERES**, mainly composed of land-birds, is excluded, although it contains species such as the Dipper, Sedge-Warbler, and others, which live by streams and marshes.

The Cormorants and the Gannet (**STEGANOPODES**) occupy the opening pages; next follow the Herons and their allies (**HERODIONES**), the Flamingoes (**ODONTOGLOSSÆ**), and the Geese, Swans, and Ducks (**ANSERES**).

Passing over three Orders of land-birds (**COLUMBÆ**, **PTEROCLETES**, and **GALLINÆ**), next come the Rails, Cranes, and Bustards (**GRALLÆ**), the Plovers, Snipes, Sandpipers, Curlews, and their allies (**LIMICOLÆ**), the Terns, Gulls, and Skuas (**GAVIÆ**), the Auks (**ALCÆ**), the Divers and Grebes (**PYGOPODES**), and lastly the Petrels, Shearwaters, Fulmars, and Albatrosses (**TURBINARES**).

It will be seen, therefore, that the present work deals not only with the widely-separated Orders of web-footed birds, but also with wading-birds, many of which latter take freely to the water, and often wade so deeply as to be carried off their feet, when they will frequently swim for a certain distance, while some such as the Water-hen, the

Coot, and the Phalarope, habitually swim with the same ease as a Duck or a Gull.

Geograph-
ical dis-
tribution.

Most aquatic birds are migratory, and some take immense aerial journeys in spring and autumn to and from their breeding-haunts. Being widely distributed over the face of the Globe, their geographical distribution is an important and interesting study. For information on this part of the subject, and regarding allied species and representative forms, frequent references have been made to Mr. Howard Saunders's Manual, and to several volumes of the Catalogue of the Birds in the British Museum.

Plumage.

The seasonal plumage-changes, so marked in many aquatic birds, may well attract the attention of the student of ornithology. Some birds, such as Gulls, several of the Ducks, the Gannet and others, do not attain their mature dress until the third, fourth, fifth, or even sixth year, and the transition stages are often somewhat difficult to determine. It is hoped that the descriptions given in the text, though of a general character, will enable the reader to assign to its species a bird whether immature or adult, male or female, in winter or in nuptial garb.

It is well to understand that the term *winter-plumage* is used only in a general sense to signify other than the nuptial plumage, and in all cases does not indicate the dress assumed in our winter months. Many Petrels, for instance, which breed in the Southern Hemisphere are in winter-plumage in our summer months, though, as a matter of fact, in this particular group, it would appear that the plumage in the two seasons is, as a rule, identical. It may also be added that, while the winter and nuptial plumages are always described under separate headings in the text, there are some birds which undergo only one moult in the year, and so the expression '*similar to the nuptial plumage*,' does not necessarily imply a comparison, but rather that the winter and nuptial plumages are one and the same dress.

The feathers of the different regions of the body have been for the most part described in ordinary rather than in technical terms, though such words as *scapulars*, *secondaries*, *primaries*, and *axillaries*, could not well be dispensed with. The positions of these groups of feathers are seen in Plate II.



SNOW-BUNTING (Male).

The chief feathers of the wing are lettered.

S Scapulars. *S'*—Inner secondaries. *S''*—Outer secondaries. *P*—Primaries.

From a specimen collected and mounted by the author.

In most species it seems hardly necessary to refer to the axillaries, seeing that they are usually whitish in colour, but where these feathers form a distinguishing feature (*e.g.*, the black axillaries of the Grey Plover, or the black and white 'barring' on the same feathers of the Green Sandpiper, Plate XXXV.), they are described. In like manner the down of the nestling, which is usually variegated with different shades of yellow, brown, and black, is not described; the reader's attention is directed only to curious forms, such as the stripes of the nestling Grebe and the sooty-black shade of the young Corn-Crake.

Generally speaking, the irides of birds undergo a gradual colour-change until maturity is reached; it therefore seems unnecessary to describe other than the colour of the irides of the perfectly mature bird. While the foregoing remarks also apply to the beak and feet, the tints of these sometimes vary in adults at different seasons of the year; thus it is to be understood that such colours refer only to the conditions found when the nuptial plumage is assumed.

The voice-syllables are most difficult to describe on paper, and no doubt are best expressed in terms of musical notation; even then it is necessary to refer the notes to special forms of instruments, on which the characteristic pitch, tone, and volume, can be reproduced. Still, in a given call-note or in an alarm-cry, the number of syllables, their rapid or slow succession, their repetition, and the way in which they are accentuated, are points which generally can be appreciated on paper without musical aid. It is to be hoped that attempts to describe the voices of birds on these lines may prove of some use to the reader when he goes afield.

In describing some species it has been found advantageous to compare them with certain others with which they might easily be confounded. This is well seen in the case of the darker-plumed ducks, which usually can be observed only at a distance with a binocular.

Practical
hints.

A few practical hints, from personal experience, may here be given as to the manner in which birds may be most readily observed in their natural haunts, and, if necessary, collected. A powerful binocular with a wide field of vision is essential, as by far the greater number of sea-birds will not admit of near approach and inspection, at all events in the absence of cover. In their breeding-haunts most species can be watched at a few yards' distance; otherwise, only under exceptional circumstances, as when immature birds first reach our shores in early autumn and are unsuspicious of the prowling gunner, can one get close enough on the open strand to make accurate observations with the naked eye. When watching birds on the slob-lands, it is most important that one's dress should harmonise as nearly as possible with the natural surroundings, and when walking over the beach an apparently unconcerned gait should be assumed. Many birds become accustomed to the presence of cockle-pickers and cinder-gatherers, and can well distinguish between those persons who have no idea of harming them, and the gunner who lurks about intent on destruction.

The keen sight possessed by birds for distant objects is remarkable. When the observer descries a large flock in the distance, resembling at first a puff of smoke moving rapidly along the horizon, he should crouch low and remain perfectly still until a rush of wings tells him that the flock is passing overhead. Should the tide be ebbing and should he have selected a favourable position, the flock may swoop down and alight quite near him. I have often baffled birds by doubling myself into such curious attitudes that they probably mistook me for some inanimate object, such as an old hamper or a piece of sacking washed ashore, and by this means I have found myself surrounded by great numbers busily pattering about in search of food (Plate I., Frontispiece).

Some of the carrion-feeding species which haunt our shores, and are seen hovering suspiciously over a stranded carcase before alighting to feed, may be brought within sufficiently close range for their habits to be studied, by the observer feigning death. By lying flat on my back



W. D. Latimer, Photo.]

AMBUSHED AMID THE RUSHES OF THE SAND-DUNES.

Watching the habits of shore-birds with the aid of a powerful binocular.

with my eyelids apparently closed, yet sufficiently open to allow of vision, I have allured Great Black-backed Gulls to approach on the wing within a ridiculously close range, and the late Mr. E. Williams informed me that by adopting this form of strategy he frequently brought Ravens and Hooded Crows within thirty yards of his head.

Many species of Ducks and Geese are harassed to such an extent by the 'stanchion shooter,' that they learn to regard the presence of man with marked suspicion. In districts where they are persistently hunted it is most difficult to scull a boat within good observing-range. Here a powerful field-glass is particularly useful. But even the much hunted Brent Goose and Wigeon, which, throughout the shooting-season, are extremely vigilant and gun-shy, lose a remarkable amount of their suspiciousness when they are left in peace during the commencement of the close season in March and April, the last months of their stay in our latitudes. Nor can one fail to notice how tame these and other species of wildfowl become when pinioned on ornamental waters; how they will even approach the brink to take the proffered cake from the hand of a passing stranger.

Gulls, as a rule, are easily observed; being naturally greedy they can be attracted to close quarters by casting food on the surface of the water. I have made several interesting observations from city-quays, and from boats, especially from the decks of channel-steamers, in the wake of which these birds will often wander for miles.

The ambush afforded by sand-dunes, especially when overgrown with thick and tall rushes, gives one an excellent opportunity of closely inspecting wading-birds as they run hither and thither on the beach (Plate III.).

Regarding the question of collecting specimens, unnecessary destruction of bird-life must be protested against. Far more is to be learned by patient and persevering observation, Collecting
specimens.

carried on in adverse no less than in genial weather, in remote and difficult places no less than on the silvery beach over which one can travel for miles without growing tired, than by yielding to an impetuous desire to shoot every specimen which happens to come within range of the fowling-piece.

The destruction of sea-birds, especially of Terns and Gulls for millinery and other useless purposes, is in a marked degree brutal, and in those pages dealing with the species generally victimised, I have not refrained from expressing an opinion on the subject. Happily in many districts sea-birds and their eggs are now protected by law, and it is to be hoped that this protection will be extended to other districts. The Societies for the Protection of Wild Birds in both Great Britain and Ireland, are doing such excellent and energetic work in this direction that it is needless to say more.

Fortunately the large majority of shore-frequenting birds breed in latitudes far north of the British Isles, where their eggs and young are little molested, and so despite the raids of the gunner the numbers are well kept up. But some, such as the Chough and Kite, in seeming danger of becoming extinct as British breeding-species, deserve to be put under the rigid protection of the Law.

The Systematic Ornithologist who would study plumages and structural characters must of course collect a certain number of specimens, and any one who possesses a real love for field-work will, no doubt, prefer to collect his own. It is true that the pursuit of birds often demands endurance, patience, and tactful manœuvring, in the course of which, however, much practical knowledge can be gained; indeed field-work properly carried out is the keystone to Systematic Ornithology. But it frequently happens that time and opportunity are not afforded to secure certain specimens which may be particularly needed, and so one is driven to seek the aid of others. Here the sportsman can often materially help. Indeed the numbers of strange birds, which from time to time fall to his gun, are remarkable, especially those skulking, marsh-frequenting species, which only a well-trained dog can flush, and a keen-sighted and clever marksman can bag. It were indeed to be wished

that any one who shoots a rare bird in a remote part of the country should despatch it to a competent authority for identification, if possible on the day on which it has been secured, so that its occurrence may be properly substantiated.

And, lastly, a word on collecting in general. A naturalist who kills for the mere sake of collecting deserves to rank lower than one who does not collect at all. And yet one might venture to say that there are private museums throughout the country, well stocked with carefully-mounted specimens, which have been formed for no special purpose whatsoever. This aimless method of collecting is far too common a practice.

The sentiments expressed by the late Professor Elliott Coues bear out these remarks: "Collecting stands much in the same relation to ornithology that the useful and indispensable office of an apothecary bears to the duties of a physician. A field-naturalist is always more or less of a collector; the latter is sometimes found to know almost nothing of natural history worth knowing. The true ornithologist goes out to study birds alive and destroys some of them simply because that is the only way of learning their structure and technical characters. There is much more about a bird that can be discovered in its dead body—how much more, then, than can be found out from its stuffed skin! In my humble opinion the man who only gathers birds, as a miser money, to swell his cabinet, and that other man who gloats, as miser-like, over the same hoard, both work on a plane far beneath where the enlightened naturalist stands. One looks at Nature, and never knows that she is beautiful; the other knows she is beautiful, as even a corpse may be; the naturalist catches her sentient expression, and knows how beautiful she is! I would have you to know and love her; for fairer mistress never swayed the heart of man. Aim high!—press on, and leave the half-way house of mere collectorship far behind in your pursuit of a delightful study, nor fancy the closet its goal."

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CORRIGENDA.

- Page 8, at the beginning of line 14 insert *Note*.—
 „ 11, line 14, for *Allied Species and Representative Forms*.—read *Note*.—
 Pages 12, line 18, 14, line 22, 45, line 20, for *esturine* read *estuarine*.
 Page 38, line 25, for *Allied Species and Representative Forms*.—read *Note*.—
 „ 48, line 9, for *September* read *October*.
 „ 51, at the beginning of line 16 insert *Note*.—
 „ 62, line 8, for *Bean Goose* read *Bean-Goose*.
 „ 65, line 19, for p. 59 read p. 519.
 „ 74, for $2\cdot7 \times 1\cdot3$ read $2\cdot7 \times 1\cdot8$.
 „ 75, line 16, after *state* insert *in*.
 „ 99, line 17, before *Mallard* insert *nestling*.
 „ 134, line 13, for *Rathfarnam* read *Rathfarnham*.
 „ 141, line 27, for *Bayles* read *Baylis*.
 „ 143, lines 13, 14, for *miniature* read *immature*.
 „ 185, line 20, for *cærules* read *cæruleus*.
 „ 191, third line from bottom, for *Geryish* read *Greyish*.
 „ 264, third line from bottom, for *minature* read *miniature*.
 „ 296, line 17, for *Walter* read *Watters*.
 „ 343, second line from bottom, for *Secondaries* read *secondaries*.
 „ 353, eighth line from bottom, for *most* read *more*.
 „ 385, line 15, for *Sand-eels* read *sand-eels*.
 „ 392, line 19, after *breeding-species* insert a full-stop.
 „ 399, at the end of foot-note 3 add in 1901. (*Vide* also W. L. Macgillivray, *Ann. Scot. Nat. Hist.* 1901, p. 237.)
 „ 401, seventh line from bottom, after *November 20th*, add 1901.
 „ 405, omit Family LARIDÆ.
 „ 408, line 11, add see p. 581.
 „ 414, line 7, before ‘*pool-dancing*’ insert *of*.
 Pages 417, line 6, 451, line 17, 493, line 13, for *Kamtschatka* read *Kamtchatka*.
 Page 427, line 29, for *engulphed* read *engulfed*.
 „ 431, line 18, for *wharves* read *wharfs*.
 „ 441, for $2\cdot9 + 2$ in. read $2\cdot9 \times 2$ in.
 „ 445, line 17, for *South* read *south*.
 „ 455, line 14, for *catarrachtes* read *catarrhactes*.
 „ 458, line 12, for *Barrington*, read (*Barrington*,
 „ 465, line 28, for *recalls* read *cites* a case of.
 „ 488, third line of foot-note, for *Bellisle* read *Belle Isle*.
 „ 489, line 12, for (*tomia maxillary*) read (*maxillary tomium*).
 „ 519, in foot-note 3, for *Scarboroug* read *Scarborough*.
 „ 530, line 20, for *egg* read *eggs*.
 „ 537, line 33, for *coasts* read *coast*.
 „ 539, fourth line from bottom, for *Reid* read *Read*.
 „ 540, line 23, for *Forked-tail* read *Fork-tailed*.
 „ 542, for **FORKED-** read **FORK-**.
 „ 552, second line of foot-note, for *n* read *in*.
 „ 557, sixth line from bottom, for *amé* read *âme*.
 Plate XLI., Fig. 2, for *E. Williams, Photo.*] read *C. D. Head, Photo.*.
 „ LIV., for *EGGS* read *EGG*.

REFERENCE TO PLATE XXXIX.

TERNS.

(Accidentally omitted from p. 393 of the text.)

- A. Little Tern, immature male, transitional first autumn to winter-plumage.
- B. Common Tern, adult female, nuptial plumage.
- C. Common Tern, adult male, nuptial plumage.
- D. Little Tern, adult female, nuptial plumage.
- E. Arctic Tern, adult female, transitional nuptial to winter-plumage.

NOTANDUM.

Information regarding recent occurrences of the rarer British aquatic birds, which during the preparation of this volume has been inadvertently omitted from the text, will be found in the Addendum.

THE AQUATIC BIRDS OF GREAT BRITAIN AND IRELAND.

Order STEGANOPODES.

Family PELECANIDÆ.

CORMORANT. *Phalacrocorax carbo* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 52; Dresser, 'Birds of Europe,' vol. vi, pl. 388; Lilford, 'Coloured Figures,' vol. vii, pl. 1.

THIS voracious bird inhabits both fresh and salt water, and is of frequent occurrence on those larger lakes and rivers which yield an abundant supply of fish. It is plentiful and widely distributed along the coasts of the British Islands, though on the wild western sea-board of Scotland and Ireland, its congener the Shag—with which it is often confounded—is much more numerous.

Most of us are familiar with the dark figure of the sturdy Cormorant, whether seen resting on a post or buoy, gorged with food, motionless and unattractive, or standing on a rock with outstretched and dripping wings, or speeding across the tideway towards its favourite fishing-haunts.

When swimming, the greater part of the body of this bird is submerged, indeed its long neck and head are practically all that can be seen of it; hence it often escapes observation, even at close quarters. As a general rule this species is shy and watchful on the water, and can only be observed satisfactorily through a binocular.

Food.—The Cormorant feeds almost entirely on fish, which are captured at varying depths beneath the surface,

though I have seen a very young duckling snatched off the surface of an ornamental pond and demolished entire.¹

Unlike the Auks and other diving species, the Cormorant does not use its wings to propel itself under water, but depends entirely on its huge feet. Owing to the length and flexibility of its neck, which it can retract and shoot out with the speed of a serpent's strike, and the high speed with which it can travel under water, it can overtake its finny prey with the greatest ease. Eels are frequently seized, and the Cormorant has been seen rising to the surface with one of those fish held transversely in its beak. Under such circumstances the bird generally manages to jerk its prey into the air and swallow it head-foremost.² I have seen a Cormorant come up to the surface to swallow a large flat-fish, but under ordinary circumstances it will consume several small fish under water, before rising to take breath. This can be demonstrated in the fresh-water tanks of our Zoological Gardens, where the Cormorant thrives well. This species can be readily trained to catch fish, and in China and Japan it is extensively used for the purpose.

Cormorants often fare badly in rough weather, the great billows buffeting them about until they are dashed against the headlands. During a tempest, some of the younger and weaker members, being unable to venture out in search of food, perish from hunger.

Flight.—In the air the Cormorant somewhat resembles a great black goose, travelling along with outstretched neck and rapidly beating pinions. Solitary individuals are usually seen skimming over the waves, but, when taking long flights in company, the birds will proceed in a V-shaped flock at a considerable height in the air.

On fresh-water lakes and rivers, where timber is plentiful, Cormorants may be noticed alighting on trees, more particularly on the stout leafless stumps.

¹ This was a tragic scene which I witnessed at a Cormorant enclosure. The duckling, in pursuit of flies, had only just ventured to pass through one of the meshes of the wire netting, when the savage inmate dashed across the surface of the water with a great fluttering of wings, and seizing the helpless fledgling, engulfed it in an instant.

² I have known a Cormorant to swallow an eel in this manner and reappear almost immediately, with apparently another eel in its mouth, but as this performance was repeated several times in very rapid succession, it is more than likely that the one fish had been disgorged and reswallowed.



Mrs. W. Hume, [Photo.]

CORMORANTS NESTING IN TREES, WEST OF IRELAND.

The numerous white clumps are the nests, and scattered through the foliage and on the top branches, the small black figures of the birds can be discerned.

Voice.—The voice of the Cormorant is loud and croaking, and the pitch is so low that the note may be compared to that produced on a bassoon.

Nest.—The Cormorant is gregarious in the breeding-season, and large numbers of birds nest in colonies on the exposed ledges of sea-cliffs, lake-islands (where the nests are in some localities built on the ground), and in a few places on trees and bushes. (Plate IV.) The nest is a large compact structure, composed, for the most part, of stems or sticks,¹ and in maritime situations of masses of seaweed,² and it is plentifully lined with grasses and fragments of moss; wreaths of fresh ivy covered with leaves are sometimes added. The eggs, three to five in number, have a rough chalky white incrustation, under which is a pale blue shell. In sheltered localities incubation begins early in April, but on exposed sea-cliffs, not until a few weeks later. The young are at first naked and blind, the eyelids remaining closed for about a fortnight. The nestling, from the time it is hatched until it is well-grown and covered with down, thrusts its head into its parent's throat to partake of the macerated food reserved for its support.

Geographical distribution.—Abroad, the Cormorant is found breeding in Europe, including Iceland and the Faroes, in Asia, North Africa, and along the Atlantic side of North America.

DESCRIPTIVE CHARACTERS.

PLUMAGE. Adult male nuptial.—Top of head and neck, black, interspersed with thin white feathers; those springing from the back of the head grow longer and more hair-like in the nuptial season, forming a crest of sparsely

¹ I have frequently watched Cormorants in a state of captivity building their nests, and have seen the male dive to the bottom of the pond and come up with sticks or coarse grass in his beak. With crest erected and apparently looking very excited, he carries the material to the rock selected for breeding-purposes. The female looks ridiculous when receiving the attentions of her mate; she retracts her neck between her shoulders, and with beak pointing vertically upwards, she utters a hoarse laughing cry, and then either snatches the stick from her mate or allows him to deposit it beside the nest.

² In a large colony a Cormorant arrives trailing a mass of seaweed, but on the way to the nest much of this is snatched from him by the birds on other nests.

scattered straight plumes; throat and front of cheeks, white; back and wings, greenish-brown and black; primaries, black; breast and abdomen, dark bluish-black; large pure white patch on the flanks; tail (of fourteen feathers) black.

Adult female nuptial.—Resembles the male plumage, but is duller, with a shorter crest.

Adult winter, male and female.—The crest is very short; throat and front of cheeks, impure white; white on the flanks replaced by bluish-black.

Immature, male and female.—Plumage chiefly dark brown, the breast and abdomen being a paler shade, mottled with white.

BEAK. Brown (except the basal part of the lower segment and the throat-pouch, which are yellow); hooked at the extremity.

FEET.¹ Black.

IRIDES. Bright green.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	36	in.	Female smaller.
WING	...	...	14	„	
BEAK	...	...	2·7	„	
TARSO-METATARSUS	...	...	2·25	„	
EGG	...	...	2·75	×	1·6 in.

Allied Species and Representative Forms—*P. novæ-hollandiæ* is the Australian and New Zealand form.

¹ The term FEET is here used in its strict morphological sense, and includes not simply the toes, and, in the case of water-birds, the webs, but also the tarso-metatarsi (the so-called “legs” or “tarsi”). In most birds the feet are covered with scales, and the legs with feathers, excepting a very limited portion immediately above the ankle-joints. In this region the legs are clothed with scales which are usually the same colour as those of the tarso-metatarsi, and do not call for a separate description. Most birds support themselves on their toes, but some species, such as the Auks, Divers and Grebes, frequently bring the whole foot in contact with the ground when standing.

SHAG. *Phalacrocorax graculus* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 53; Dresser, 'Birds of Europe,' vol. vi, pl. 389; Lilford, 'Coloured Figures,' vol. vii, pl. 2.

The Shag is essentially a sea-bird and is more abundant than the Cormorant along those portions of the wild rocky coasts of Ireland and Scotland which are washed by the Atlantic; its numbers exceed those of the last species also along the south-western sea-board of England and Wales.

The Shag, unlike the Cormorant, seldom alights on sand-flats at ebb-tide in company with hosts of wading-birds and gulls, or on gunwalls, piers, poles, lighthouses, or buoys. Its favourite perch is a massive rugged rock, jutting out of the sea, at no great distance from the land. Here, one or several of its own kind, accompanied by a Great Black-backed Gull, a small detachment of Oyster-catchers, and a Hooded Crow or two, form a familiar and interesting feature of bird-life on the wild desolate coast.

The Shag is one of the hardiest of sea-birds; it will keep to the water during a raging gale, until driven by tide and tempest almost on to the rocks. Then it will rise clear of the great rolling billows, and, through blinding showers of spray and foam, will wing its way to a wave-swept cavern in the beetling cliff. Numbers of immature Shags congregate in autumn, on the flat-topped grass-covered rocky islands, where they can usually be approached quite closely in a boat. They may be seen standing upright in a line, like so many soldiers, until the alarm is given, when they all take to the water; there they alternately dive and swim until they have reached a safe distance from the spectator. As in the case of the Cormorant, the greater part of the body of the Shag is under water when it is swimming. Thus when several are met with on the water, it is their long and slender necks, resembling a number of upright sticks, which first attract attention.

Food.—The Shag feeds on sea-fish, in search of which it is capable of descending to a great depth, at times even to the sea-bottom. Its mode of progression under water is identical with that of the Cormorant, and both species when about to descend, at first rise slightly in the water, and then plunge, head-foremost, with tightly closed wings. The path pursued by both Shag and Cormorant under water, appears to be one of almost vertical descent;

this, correlated with the fact that they only use their legs as propelling organs, necessitates their making a strong initial plunge under water. Indeed, these two birds are divers in the strict sense of the word, differing from the Auks, which may be said to fly with open wings through the water, in pursuit of fry, and sometimes at no great depth below the surface.

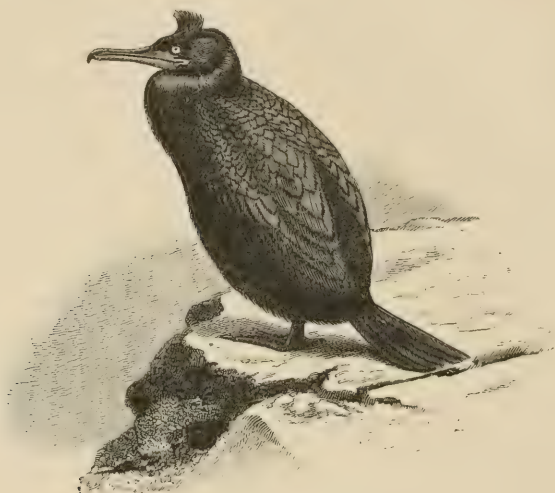


FIG. 1.—SHAG.

Flight.—On the wing the Shag strongly resembles the Cormorant, and the two species might easily be confounded by persons unacquainted with the difference in the size of the birds. The Shag, which is only three-fourths of the size of the Cormorant, is generally to be seen flying low over the waves from one fishing-ground to another. Except when migrating, there is seldom any occasion for the bird to rise high in the air, for the nest is generally situated near the base of a cliff.

Voice.—The note is croaking in character, but softer and more highly-pitched than that of the Cormorant.

Nest.—The Shag is gregarious in the breeding-season, but the colonies are usually smaller than those of the last species. The nest is generally built in nooks and caverns on sea-cliffs, rather than in exposed situations.

The ledges of a sea-cave are often tenanted by several pairs breeding in close proximity, while dens in a sea-face of boulder clay are also used. A strong pungent odour pervades these dwelling-places, more especially when the young are hatched or when incubation is far advanced. In some cases solitary nests are built in recesses between loose rocks and boulders. The Shag sits very closely on her nest, sometimes allowing herself to be touched and even stroked with the hand; in many instances, however, she will bite savagely. Once, on Lambay Island, I endeavoured to lift a bird off her nest, but she held so firmly to the ledge of the cave with the hooked extremity of her beak, that I was obliged to set her free. With a low hoarse croak she instantly retreated into the cave. The nest is composed of damp decaying seaweeds and other vegetation, firmly pressed into a compact mass. The eggs, three to four in number, resemble those of the Cormorant, but are smaller; their shells are roughly coated with lime.

Incubation begins early in April.

The young, when first hatched, are naked and blind, and are fed in the same way as young Cormorants.

Geographical distribution.—Abroad, the geographical distribution of this species is more restricted than that of the Cormorant. The Shag is common in the Faroes, on the coast of Norway, and on some of the islands off the coast of Russian Lapland. It breeds in the Channel Islands, also on the west coasts of France, Spain, Portugal, and Morocco.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, (which from January to May is surmounted by a handsome rosette-like crest of soft wavy recurving feathers), neck, breast and abdomen, rich metallic-green, reflecting tints of purple and bronze; feathers of the back and wings, dark green with blackish margins; primaries, and tail (of twelve feathers) black.

Adult female nuptial.—Similar in colour to the male.

Adult winter, male and female.—The head-crest is absent.

Immature, male and female.—Head, back of neck, back and wings, dark brown with a greenish shade; throat, breast and abdomen, lighter brown, mottled with grey.

BEAK. Black, (except the base of the under segment, which is yellow); hooked at the extremity; throat-pouch black, speckled with small round yellow spots.

FEET. Black.

IRIDES. Bright emerald-green.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	27	in.	Female smaller.
WING	...	...	10·5	„	
BEAK	...	...	2·5	„	
TARSO-METATARSUS	...	...	2·25	„	
EGG	...	...	2·25	×	1·2 in.

Allied Species and Representative Forms.—*P. desmaresti*, is the form which is found along the Mediterranean.

A male American Darter, *Plotus ankinga*, supposed to have been shot near Poole, Dorset, in June, 1851, has been recorded by Rev. A. C. Smith. ('Zoologist,' 1852.)

GANNET. *Sula bassana* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 54; Dresser, 'Birds of Europe,' vol. vi, pl. 392; Lilford, 'Coloured Figures,' vol. vii, pl. 3; Booth, 'Rough Notes,' vol. iii, plates 26 to 31.

Although belonging to the same family as the Cormorant and Shag, with which it has close structural affinities, notably in the foot, the four toes of which are connected by a web, still the Gannet differs markedly in its habits of life. Unlike the preceding species it seldom lands except to breed, preferring to lead a wandering pelagic life. It is of frequent occurrence around the British coasts, especially in spring, when the birds are passing northward in considerable numbers to breed, and again in autumn on their return journey southward. Away from its breeding-haunts the Gannet is not gregarious, and single birds, or gatherings of two or three, are most frequently met with, though I have seen large numbers fishing together.

Flight.—With its powerful lengthy pinions, and the possession of large air-chambers under the skin (which when inflated render the bird wonderfully buoyant), the



Alfred R. Dolan, Photo.

GANNETS NESTING ON THE LITTLE SKELLIG ISLAND, CO. KERRY.

Gannet is endowed with the power of sailing in the midst of the tempest, nor do the billows as they dash with unabated fury against the headlands, stay this bird's powers as it plunges fearlessly through the angry surf. Not only in its great wing-power but also in the manner in which it dives, the Gannet differs considerably from the preceding two species. The Cormorant and Shag dive only from the surface of the water, the Gannet, on the other hand, descends suddenly from a considerable height in the air with closed wings and almost incredible speed, piercing the ocean head-foremost in pursuit of fish.

Food.—When fishing, Gannets are generally met with singly, but where food is plentiful the birds collect into companies varying from five to fifty or more in number. They prey exclusively on surface-swimming fish, such as herrings and mackerel, and the impetus of the birds' descent into the water sends the spray high into the air. I have a vivid recollection of the first large flock of Gannets I saw fishing.¹ I watched the movements of the birds from a steamer. The plunge was so sudden and the splash so great, that I almost failed to recognise the form of each descending bird, and could well have believed that some mighty power was hurling huge boulders into the water from overhead.

Young Gannets are eaten, or sold as food, by the peasants in some of the remote districts of Scotland.

Voice.—When wandering over the sea, the Gannet is a silent bird, but at its nesting-haunts it is often noisy, and several members of the colony may be heard uttering a note which may be syllabled *carra-crac, carra-crac*.

Nest.—Gannets are highly gregarious in the breeding-season, selecting for their nesting-sites majestic rocks, distant from land, and several hundreds of feet in height. They usually assemble about March at their breeding-stations, which they tenant until October. In such places they crowd together in countless numbers, and their white forms against the dark rocky islands afford a most impressive spectacle. When a colony is approached, hundreds of birds appear on the wing, some wheeling gracefully about, others taking sharp swooping turns towards the cliffs, as though anxious to see that their homes and families were not being intruded upon. Large numbers of nests are placed on the ledges of cliff-faces, others on elevated platforms and on the tops of stacks.

¹ In Dundalk Bay on the east coast of Ireland.

The nest is made chiefly of seaweed with grasses and other herbage, while "rags and paper, the straw of wine-bottles and pieces of cork are used" (Ussher). The single egg has a white crust of limy material, under which is a pale blue shell. The outer coat soon becomes discoloured. Incubation begins early in May, and the birds are remarkably fearless when hatching, allowing themselves in some cases to be touched by the hand, provided their haunts are approached quietly. The young are hatched naked and with their eyelids closed, and are fed after the manner of young Cormorants.

As a British bird the Gannet breeds on Grassholm, off Pembrokeshire, the one colony in Wales: Lundy Island, its only breeding station in England, may possibly still accommodate a few pairs.

In Scotland and the neighbouring islands, this bird nests on the Bass Rock, off Haddingtonshire; Ailsa Craig in the Firth of Clyde; on Boreray in St. Kilda; on Sulisgeir, thirty-five miles north of the Butt of Lewis; and at Suliskerry, forty miles west of Stromness (Saunders).

In Ireland it breeds on the Bull Rock, off co. Cork; and more numerous on the Little Skellig, off the coast of Kerry. (Plate V.)

Geographical distribution.—Abroad, the Gannet breeds in the Faroes and in Iceland, also on some of the islands in the Gulf of St. Lawrence. During its peregrinations in autumn and winter, it wanders over the North Atlantic Ocean as far south as lat. 25° N., extending westward from North Africa to Central America.

DESCRIPTIVE CHARACTERS.

PLUMAGE. Adult male nuptial.—Top of head and back of neck, light buff; rest of the plumage pure white, except the primaries which are black; tail, wedge-shaped, the central feathers being the longest.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Head, hind-neck, back and wings, dark brown speckled with white; throat and rest of neck, breast and abdomen, mottled greyish-brown and

impure white. The adult plumage is very gradually assumed, and is not completed until the sixth year.

BEAK. Pale bluish-grey, tinged with green at the base; strong and cone-shaped; point slightly hooked.

FEET. Greyish-black.

IRIDES. Vary from pale straw-yellow to silvery-white; surrounding bare skin, greenish.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	34	in.
WING	...	...	..	19	,,
BEAK	...	...	...	4	,,
TARSO-METATARSUS	...	...	...	2.25	,,
EGG	...	...	...	3.25	× 1.9 in.

Allied Species and Representative Forms.—"A Tropic bird, *Phæthon æthereus*, is said to have been found dead in Herefordshire more than forty years ago. (J. H. Gurney, Tr. Norfolk Soc. v. p. 659)." (Saunders.)

Order HERODIONES.

Family ARDEIDÆ.

COMMON HERON. *Ardea cinerea* (Linnæus).

Coloured Figures.—Gould, ‘Birds of Great Britain,’ vol. iv, pl. 20; Dresser, ‘Birds of Europe,’ vol. vi, pl. 395; Lilford, ‘Coloured Figures,’ vol. vii, pl. 4; Booth, ‘Rough Notes,’ vol. ii, pl. 15.

In Great Britain and Ireland the Heron is the only common representative of the Order to which it belongs. Unlike the succeeding species of Herons, the Bitterns, and the Storks, which are but wanderers to our Isles, the Common Heron is resident, and, being very adaptable to its surroundings, is widely distributed. It is, in fact, a fairly ubiquitous species, occurring in considerable numbers on the remote treeless islands of the western maritime counties as well as in sheltered and thickly-timbered districts. Away from its breeding-haunts, the Heron is wont to lead a solitary and secluded life, though in some places, notably along the sea-coast, I have frequently seen parties of a dozen or more together. In a day’s walk the Heron may be met with in varied localities; along the side of a mountain-rivulet, by the banks of the clear swift-flowing trout stream, along the margin of the reed-fringed lake or river, on snipe-marshes, in the drains of turf-bogs, on esturine mud-slobs and sand-flats, and on the rocky portions of the coast. Whatever be the locality, the solitary and stately figure of the Heron is familiar to ornithologist, gunner, angler, artist and country-folk.¹

¹ The majority of people in Ireland call this bird the “Crane.”

Like its congeners, this bird will stand as motionless as a statue for a considerable time, observing the movements of creatures which may venture within striking-range of its formidable beak. I have watched a Heron visit a winding mountain-rivulet regularly for a few successive evenings, and have timed it to stand motionless for fifteen minutes before striking at a small trout. I have seen it strike several times in very rapid succession, before raising its head to swallow its prey. From this it seems evident that the Heron may strike with the point of its closed beak, as a man would use a pick-axe, thereby first disabling its quarry by breaking its back. Its long, powerful, and wedge-shaped beak, is admirably constructed for this purpose.



FIG. 2.—COMMON HERONS.

The movements of a Heron may often be successfully watched from the ambush afforded by the tall reeds which fringe the banks of a winding river. Probably the bird will alight at a bend of the river out of sight of the observer, who is then afforded an opportunity of advancing stealthily among the reeds. The unsuspecting bird may walk by the water's edge in a direction towards the observer, perhaps appearing suddenly within a few yards of him. In this way I have managed to approach Herons and study their habits, for many hours at a stretch, along the

banks of the river Maine, co. Kerry.¹ When satiated with food the bird usually stands with its neck coiled or folded back, so that the head is well sunk between the shoulders, an attitude too seldom reproduced by the taxidermist. I have noted the remarkable tameness of immature birds in localities where they are not molested. For instance, on one of the lakes near Waterville, co. Kerry, I have sculled a boat, containing several occupants, to within ten yards of a Heron. We watched it wading, knee-deep, at a slow deliberate pace, along the brink of the lake, rapidly demolishing small fish. It did not appear in the least alarmed until we arrived right beside it among the rushes, when it quickly raised its head, and stretching its long neck to its fullest, took flight, alighting again a short distance on.

Though Herons generally move slowly on foot or remain motionless when searching for food, I have seen parties of immature birds pacing at a brisk rate through shallow channels on the coast, snapping up, in quick succession, shrimps and tiny fishes, which were swarming beneath them. I have noticed this habit in early autumn when the old and young birds visit the esturine slob-lands and sand-flats of the coast.

Food.—The Heron lives largely on coarse fresh-water fish, though in some places it is destructive to young trout and salmon. It is also fond of frogs and newts, and it preys, to a less extent, upon rats and young birds: in hard frost it has been known to carry off a screaming water-hen (Ussher). I have seen a Heron strike a Black-bird, which occupied the same aviary, and swallow it, feathers and all.

Flight.—A Heron flying is a characteristic figure. It leisurely flaps its ample wings, carrying its long legs straight out behind, which appear to the observer like a pair of elongated tail-feathers, while the neck is drawn back between the shoulders. The Heron, therefore, when flying assumes quite a different pose from that of many other long-necked birds, *e.g.*, Cormorants, Swans, Geese, Ducks, Grebes, Divers, which fly with their necks at full stretch. The Heron is, under ordinary circumstances, a slow-flying bird,

¹ Herons are numerous along this river, which skirts the Heronry of Kilcoleman Abbey.

but when evading a Falcon or an Eagle it can twist and swoop with great velocity, and its powers of soaring are no less remarkable than those exhibited by the Stork or Crane. (See p. 40.)

Voice.—The loud alarm-cry is generally sounded when the bird is about to rise, or when it is winging its way homeward to roost. It can be heard a long way off, even when the bird is a great height in the air. It may be syllabled *ank-ank*, or *ack-ack*, and the tone of the voice is very harsh and scolding. The note heard at the breeding-haunts is softer and sounds like *crau-crau-craak*. The half-fledged young keep up a constant chattering, *ic-ic-ic*.

Nest.—Many species of birds which assemble in large companies to breed are more or less gregarious throughout the year, for instance, Rooks, Lapwings, Terns and Gulls. The Heron, on the contrary, is a bird which enjoys solitude except during the breeding-season, when it becomes distinctly sociable.

Hérons are very early breeding-birds, congregating at their heronries towards the end of January. They usually build on lofty trees, such as the fir or beech, often in company with Rooks and less frequently with Cormorants. In districts where trees are not available, low, stunted bushes are utilised. Heronries, however, are occasionally to be found in a variety of other sites, such as on the walls of ruins, covered or not with ivy, among reeds and bulrushes, on the bare side of a hill, and on the ground. I have found a few Herons' nests on the wild rugged cliffs of the Dingle peninsula. The nests in a heronry vary in size and shape; some are considerably larger and deeper than others, and only the smaller ones are built out at the ends of slender branches.¹ Those placed on thick, stunted bushes, on cliffs, or on the ground, often exceed in size those placed in trees. The more usual shape of the nests is that of a broad and rather flattened cup: the foundation is made of sticks, the lining is of finer twigs, sometimes of dried grass and other herbage. The eggs, three to five in number, are bluish-green; they are laid early in February in sheltered

¹ Herons on approaching their breeding-haunts may often be seen precipitating themselves through the air from a considerable height and perching without hesitation on the nearest branches, which are not always capable of sustaining their weight. It is amusing to see the antics of the great birds as they tumble through the tops of the trees before gaining a sure footing; their mates all the while uttering a low and anxious growl.

heronries, but later in exposed localities, and the young are able to leave the nest in May, after which a second clutch is often hatched. It would appear that the majority of birds in a heronry commence to incubate much about the same time, so that nearly all the young of the first broods are hatched out together. This is borne out by the fact that the ground beneath the nesting-trees may be seen thickly strewn with empty egg-shells early in the month of March. The young are helpless creatures for several days after they are hatched. In August, adults and young leave the heronries for the season, returning year after year to the same breeding-haunts.

In Great Britain and Ireland the Heron is still a plentiful breeding-species, so much so that it would be beyond the limits of this work to specify the names of the counties in which heronries are to be found. It may, however, be mentioned that in addition to the mainland, islands off the western sea-board of Scotland and Ireland accommodate heronries.

Geographical distribution.—Abroad, the Heron breeds over the greater part of Southern and Central Europe, its northern range hardly extending beyond the latitudes of our own Isles. Eastward, it breeds in Temperate and Tropical Asia, but to the African Continent as well as to Australia it is only a winter visitor. Exceptionally it has wandered to Iceland and Greenland.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Forehead, white; top of head and long crest-plumes, bluish-black; cheeks, throat and neck, white, the last being streaked in front by two dark bluish-grey lines; at the root of the neck is a tuft of long white feathers; back, wings, tail, slate-colour; primaries, blackish; breast¹ and abdomen, greyish-white.

Adult female nuptial.—The markings are similar to those of the male, but the shades are duller, and the head and neck-plumes are shorter.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Entire plumage chiefly light slate-colour, the neck being of a paler shade; head-plumes much shorter than in the adult; neck-plumes absent.

¹ All members of the Heron family possess powdery tufts of decomposed feathers along the breast and sides.

BEAK. Yellow; strong, wedge-shaped, and well pointed at the extremity.

FEET. Greenish-brown.

IRIDES. Light orange-colour; bare patch in front of the eye, green.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	37	in.	Female smaller.
WING	...	...	17·25	„	
BEAK	...	...	5	„	
TARSO-METATARSUS	...	...	6·75	„	
EGG	...	...	2·5	× 1·7	in.

PURPLE HERON. *Ardea purpurea* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 21; Dresser, 'Birds of Europe,' vol. vi, pl. 396; Lilford, 'Coloured Figures,' vol. vii, pl. 5.

The Purple Heron is a rare and an irregular visitor, occurring chiefly on the east coast of England. According to Mr. Saunders, about fifty examples have been taken in our Isles, and these mostly immature. In the 'Zoologist' for 1903, p. 107, mention is made by Mr. Steele-Elliott of the capture of a specimen in Hertfordshire in November, 1902. There is only one record of the Purple Heron having been obtained in Ireland, namely, a bird shot at Carrickmacross, co. Monaghan, in 1834. This specimen is preserved in the Science and Art Museum, Dublin (Proc. Zool. Soc. 1834, p. 30). From its plumage it is evidently an adult bird.

In Scotland, this species has been recorded from Caithness and Aberdeenshire more than forty years ago, while an immature bird was shot near Prestonpans, East Lothian, in October, 1872 (Saunders).

In its habits the Purple Heron is shy and wary; by day it skulks amid the long reeds of marsh and riverside, where it harmonises so exactly with the surroundings that its presence may be altogether overlooked, or its long thin neck may be mistaken for a reed.

Flight.—The flight is buoyant and well sustained.

Voice.—The note is hoarse like that of the Common Heron.

Food.—The Purple Heron preys upon fish, small reptiles, mammals, frogs, insects and worms. It seeks its food mainly after sunset and during the night.

Nest.—This species breeds on bog-land, amid thick reeds and sedges. The surrounding vegetation is generally utilised to make a platform, the bird trampling down the coarser rushes until a structure is raised two or three feet above the water, and on this, smaller fragments of grasses and other herbage are arranged to form a rude lining, on which the eggs are placed. In the 'Zoologist' for 1901, pp. 290-293, an interesting account is given by Mr. R. B. Lodge, of his photo-trapping, with a plate of the Purple Heron "automatically photographed by itself."

The eggs, three in number, are bluish-green.

Geographical distribution.—The Purple Heron breeds in France, Holland, Spain, Central Germany and Southern Russia. Considering the proximity of Holland, where the bird is common in summer, it is somewhat surprising that more records are not forthcoming of the occurrence of the Purple Heron on the east side of Great Britain. As a wanderer, it has visited North Germany, Poland, and Scandinavia, while it migrates in winter across the Mediterranean, reaching North Africa, the islands off the west coast, and extending down to the Cape.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head and long plumes, glossy purplish-black; sides of head and neck, fawn-coloured, striped with bluish-black; front of neck and throat, yellowish-red, with a black streak extending on either side of the middle line, and ending at the root of the neck in a handsome tuft of brown, grey and black feathers; back and wings, dark slate-grey, the long filamentous plumes being chestnut; tail, grey; under wing-coverts, light-brown; breast, rich purple-red; thighs, rufous.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—The long plumes are absent.

Immature, male and female.—Until the second moult, the head, neck and dorsal plumes are absent, and the general colour of the back and wings is rusty-red, while the breast and abdomen are brownish-white.

BEAK. Yellow.

FEET. Greenish-yellow ; toes, very long.

IRIDES. Yellow.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	33	in.	Female smaller.
WING	...	...	14.25	„	
BEAK	...	...	6	„	
TARSO-METATARSUS	...	...	5.4	„	
EGG	...	...	2.2	×	1.15 in.

Allied Species and Representative Forms.—*A. manillensis*, with no stripes on the fore-neck, is the Eastern representative.

GREAT WHITE HERON. *Ardea alba* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 22 ; Dresser, 'Birds of Europe,' vol. vi, pl. 398 ; Lilford, 'Coloured Figures,' vol. vii, pl. 6.

Many of the notices regarding the occurrences of the Great White Heron in our Isles are unsubstantiated, moreover this species seems to have been confounded on several occasions with the Spoonbill.

In the 'Transactions' of the Norfolk Natural History Society, v, p. 186, Mr. J. H. Gurney has shown that there are but five well-authenticated British specimens on record. These are:—Two taken in Yorkshire ; viz., one from Hornsea Mere in the winter of 1821, the other from Beverley, in 1835 (Strickland). The former is preserved in the York Museum.

The third specimen was procured at Tynninghame, Firth of Forth, in June, 1840 (Turnbull, 'Birds of East Lothian,' p. 42). This specimen is preserved in the collection of the Earl of Haddington.

The fourth was obtained on Thorney Fen, Cambridgeshire, in June, 1849 ; it is preserved in the collection of Colonel Strong, Thorpe Hall, Peterborough.

The fifth, a comparatively recent example, came from Loch Katrine, Perthshire, in May, 1881. (Journ. Roy. Phys. Soc. Edin. ix, p. 568.) It is preserved in the Edinburgh Museum.

Several other occurrences of more doubtful origin are cited in Mr. Harting's 'Handbook of British Birds,' 1901, pp. 439-441.

The Great White Heron is common in many countries of Southern Europe as well as in Asia and Africa.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Entire plumage white; the filamentous feathers on the back are long, and form a considerable tuft; at the root of the neck there is another tuft of smaller proportions.

Adult female nuptial.—Similar in colour to the male, but with shorter plumes.

Adult winter, male and female.—The long feathers of the back are absent.

Immature, male and female.—The dorsal plumes are not assumed until the second spring.

BEAK. Black during the nesting-season, yellow in the winter (Saunders).

FEET. Brownish-black.

IRIDES. Yellow.

EGGS. Light greenish-blue; clutch, three to four.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	35	in.	Female smaller.
WING	...	...	17	"	
BEAK	...	...	6	"	
TARSO-METATARSUS	...	...	7.75	"	
EGG	...	...	2.5	× 1.5	in.

LITTLE EGRET. *Ardea garzetta* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 23; Dresser, 'Birds of Europe,' vol. vi, pl. 399; Lilford, 'Coloured Figures,' vol. vii, pl. 7.

In the south of Europe, especially in those countries which fringe the Mediterranean, as well as over a wide area of the Asiatic and African Continents, the Little Egret is tolerably common, but it very seldom wanders as far north as the British Isles. The majority of British records are unreliable, indeed, Mr. Saunders, in his 'Manual of British Birds,' p. 373, states "as far as I can learn, the only example about which there can be no doubt, is an adult

examined and recorded by the late Mr. J. Gatcombe, killed at Countess Weir, on the Exe, on June 3rd, 1870, and belonging to Mr. E. H. Harbottle, of Topsham, near Exeter." "It is not improbable, however," he continues, "that one



FIG. 3.—LITTLE EGRET.

has been obtained in Sussex; while the late Lord Lilford (B. Northamptonsh. ii, p. 118) adduced some evidence that two were shot near Whittlesea about 1849.¹ There is

¹ In the 'Zoologist' for 1901, pp. 70-71, Mr. R. Newstead, of the Grosvenor Museum, Chester, states that when overhauling the collection of birds belonging to the Chester Society of Natural Science, he found a Little Egret, labelled on the back of the case "Egret. Male. Shot March, 1826. near Paul Humberside, Yorkshire." In the same number of the 'Zoologist,' p. 107, Mr. J. H. Gurney publishes the following criticism with regard to British-killed Egrets: "In Loudon's 'Magazine of Natural History' for 1836, p. 599, Mr. J. C. Dale, of Glanvilles Wootton, in Dorsetshire, mentions that "at a sale of birds, &c., I attended in March, 1826, at Southampton, was an Egret (a fine specimen), lot 38,

no specimen in existence to prove Thompson's assertion that the Little Egret has visited Ireland on three occasions."¹

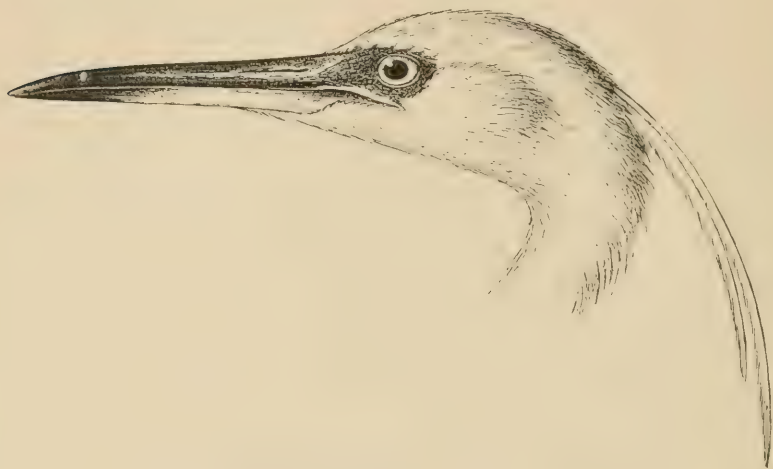


FIG. 4.—HEAD OF LITTLE EGRET. $\frac{1}{2}$ Nat. size.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Entire plumage beautiful milky-white. From the back of the head proceed two long slender plumes, while at the root of the neck and especially along the back, the plumes are much lengthened, soft and wavy.² (Figs. 3 and 4.)

sold for £5 5s., probably shot near that place." Possibly this is the same specimen alluded to by Mr. Newstead (*ante*, p. 70), as the date is exactly the same, and the locality in Yorkshire may have been subsequently added to the label under the impression that it had been killed in that county."

¹ Mr. Ussher, in his 'Birds of Ireland' (p. 162), refers to the occurrences cited by Thompson of the Little Egret in Ireland, with all caution. He gives the dates of the three records from Kerry, Cork and Wexford, but adds that there is only one bird preserved. This is in the Trinity College Museum, but the data of the label are not sufficient to prove it is really an Irish specimen.

² The beautiful silky filiform plumes of the Egret, better known among milliners as 'ospreys,' have been, and still are much sought after, for ornamental purposes. In the Eastern countries the Egret feathers are worn to adorn the head-dress of persons of the highest rank, and this charming little Heron has been further victimised to supply "the

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—The dorsal and head-plumes are absent.

Immature, male and female.—Feathers greyish-white in colour and long plumes absent.

BEAK. Black.

FEET. Black, with yellow spots on the toes.

IRIDES. Light pinkish-yellow.

EGGS. Pale blue-green; rather pointed at both ends: clutch three to six.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	21	in.
WING	...	...	...	11·25	„
BEAK	...	...	...	4	„
TARSO-METATARSUS	...	...	...	3·75	„
EGG	...	...	...	1·75	× 1·25 in.

BUFF-BACKED HERON. *Ardea bubulcus* (Audouin).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 24; Dresser, 'Birds of Europe,' vol. vi, pl. 400, fig. 1; Lilford, 'Coloured Figures,' vol. xii, pl. 8.

There is only one well-authenticated example of this southern species on record, an immature female shot towards the end of October, 1805, near Kingsbridge, in Devonshire. (Montagu, Trans. Linn. Soc., vol. ix, p. 197.) This bird is preserved in the Natural History Museum, South Kensington.

Mr. Harting, in his 'Handbook of British Birds,' 1901,

"plume" that surmounts or until lately surmounted the "busby" or "bearskin," of our artillery, hussars, and certain select regiments of foot." Here as an ornament "it verges on the ridiculous, all the grace of the original being lost in the horsehair that counterfeits its form" (Newton). Many thousands of Egrets have also been slaughtered to supply the millinery market, and as the massacre takes place just prior to the breeding-season, when the plumes are at their best, it is obvious that if this wholesale trading continues the birds will speedily become exterminated. It is to be hoped that a law for the protection of these birds will be enacted and rigidly enforced, so that 'ospreys' will not be allowed into our markets for ornamental purposes, before the Little Egret, like many other beautiful and interesting birds, becomes by the cruel hand of man, but a thing of the past.

mentions another occurrence, a bird taken near Yarmouth in 1827. But this specimen is not now in existence, having been destroyed by moths.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, crest, fore-nape, plumes of the back and neck, bright buff-colour, rest of the plumage white, shading to light cream-colour on the wing-coverts.

Adult female nuptial.—Similar in colour to the male, but with less developed plumes.

Adult winter, male and female.—The long buff feathers are absent, so that the bird is almost pure white.

Immature, male and female.—Somewhat resembles the adult in winter, but the white is less pure.

BEAK. Reddish at the base, tipped with yellow.

FEET. Yellowish-red.

IRIDES. Pinkish-yellow.

EGGS. Pale blue ; ends rounded : clutch three.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	19	in.	Female smaller.
WING	...	9·5	„	
BEAK	...	2·25	„	
TARSO-METATARSUS	...	3·25	„	
EGG	...	1·8 × 1·3	in.	

SQUACCO HERON. *Ardea ralloides* (Scopoli).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 25; Dresser, 'Birds of Europe,' vol. vi, pl. 400, fig. 2; Lilford, 'Coloured Figures,' vol. vii, pl. 9.

The Squacco Heron, resident and plentiful in North Africa, and fairly common as a summer-migrant in parts of Southern and Central Europe, occurs only as a scarce and irregular visitor to the British Isles. Immature birds have, for the most part, been obtained in the spring or summer months.

A specimen taken at Boyton, Wiltshire, in 1775, appears

to be the earliest on record (Latham, Gen. Hist. Birds, vol. ix, p. 110).

Among recent captures may be mentioned:—One from the south of Ireland, a bird taken near Dungarvan Bay co. Waterford, September 12th, 1896 (Ussher, 'Birds of Ireland,' p. 163); another from the North of Scotland, a bird taken on North Ronaldshay, on September 7th, 1896. (Ann. Scot. Nat. Hist., July, 1897); and a third taken near Rye, Sussex, on June 3rd, 1905. (J. B. Nichols, 'Zoologist,' 1905, p. 349.)

The Squacco Heron has also been recorded from:—

England—Hampshire, Isle of Wight, Dorset, Somerset, Devon, Cornwall, Shropshire, Nottinghamshire, Suffolk, Norfolk, Lincolnshire, Yorkshire and Cumberland.

Wales—Montgomeryshire, Denbighshire and Breconshire.

Scotland—Two instances, in addition to the one already cited, one from the Glasgow Canal, near Stockton, on October 9th, 1852 (Harting), another taken near Edinburgh (Saunders).

Ireland—Kerry, one obtained on June 10th, 1875, another on September 17th, 1895. Cork, one obtained May 26th, 1849, another in 1850, a third, October 26th, 1860, a fourth, July 15th, 1877. Waterford (*vide supra*), Londonderry, one procured on November 24th, 1881. (Ussher, 'Birds of Ireland,' p. 163.)

In its general habits the Squacco resembles, more or less, the other Herons. During the day-time it is wont to remain in the same position for a number of hours, secluding itself among tall tussocks and sedges.

Voice.—Its voice, not often sounded, is harsh and monosyllabic.

Food.—Frogs, small crabs, shrimps, slugs, snails, fish, insects, shrews and mice, are eaten by this practically omnivorous species; the late Mr. E. Williams informed me that he found the stomach of a specimen, which he preserved, filled with the remains of small crustaceans.

Nest.—The Squacco Heron is gregarious in the breeding-season. The heronries are built on low trees and bushes adjoining bog-lands. The nest, composed almost entirely of sticks, is roughly put together; the eggs, four to six in number, and of a greenish-blue colour, are laid early in May. The members of a heronry often fight fiercely.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head and back of neck, pale buff, striped with brownish-black lines; the head-plumes, long and pointed, are pure white edged with black; sides and front of neck, rich buff; back, yellowish-brown with a tinge of purple; dorsal-plumes, long and filamentous; wing-coverts, light buff; rest of plumage, white.

Adult female nuptial.—Similar in colour to the male, but with less developed plumes.

Adult winter, male and female.—The long plumes are absent.

Immature, male and female.—The general colour is not so pure as that of the adult plumage, and shows much greyish-brown; the streaking on the neck is more pronounced, and there is a considerable amount of brown on the back and on the inner secondaries.

BEAK. Base, rich blue; point, blackish.

FEET. Yellowish-pink; soles, yellow.

IRIDES. Yellow.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	20 in.
WING	...	...	...	9 „
BEAK	...	...	...	2·6 „
TARSO-METATARSUS	...	...	...	2·8 „
EGG ...	...	...	...	1·5 × 1·1 in.

NIGHT HERON. *Nycticorax griseus* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain, vol. iv, pl. 26; Dresser, 'Birds of Europe,' vol. vi, pl. 402; Lilford, 'Coloured Figures,' vol. vii, pl. 11.

The Night Heron, though far from common, may be regarded as an annual spring and autumn migrant to the British Isles. It has been more often recorded, in both Great Britain and Ireland, than the Squacco Heron. In England it appears to have visited the west and north less frequently than the other districts. It has occurred four times in the south of Scotland, several times in Argyllshire, and once in Aberdeenshire. Moreover, on October 12th, 1896, a specimen was shot on Benbecula, after a heavy gale from the south. The bird, an immature male, is heretofore



FIG. 5.—NIGHT HERON.

the only one recorded from the Outer Hebrides. (Eagle Clarke, Ann. Scot. Nat. Hist.)

In Ireland, Mr. Ussher states that over twenty occurrences have taken place since 1834. Of these, seven came from Cork, a noted county for rare Herons, three from Dublin, two from Down, and one each from the following counties:—Kilkenny, Queen's County, King's County, Louth, Monaghan, Mayo, Armagh, and Donegal. ('Birds of Ireland,' p. 164.) The first British specimen on record was procured near London in May, 1782 (Saunders, Man. Brit. Birds, 1899, p. 379); among recent captures may be mentioned, specimens taken in co. Cork, May 31st, 1899; in co. Wexford, April 21st, 1899; in co. Meath, May 10th, 1900 (Ussher); in Norfolk, November 8th, 1899, (J. H. Gurney), and a specimen taken in Sussex, September 24th, 1904 (J. B. Nicholls).

Voice.—During the greater part of the day the Night-Heron skulks silently through dense and tall vegetation, such as flags, reeds and bulrushes; after dusk it becomes more lively, when its plaintive note *quā-ā, quā-ā*, may be heard.

Food.—The diet is of a very mixed character; fish, frogs, snails, worms, shrimps and water-beetles, are eaten.

Nest.—The Night-Heron breeds in colonies, selecting trees and bushes growing in marshy situations. It also builds on the ground, erecting a platform of bent reeds above the level of the water. The nest, for the most part, is made of broken sticks. The eggs, three to five in number, are pale greenish-blue, with both ends somewhat pointed. Incubation begins about May.

From the numbers of adult birds of both sexes which visit the British Isles in full nuptial plumage annually during the breeding-season, we may infer that this Heron might breed in suitable localities, were it not shot down ruthlessly. It should be borne in mind that several specimens have been procured, that the bird is quite common in many other countries, so that if there is a likelihood of its breeding with us, why not give it every encouragement to do so?

Geographical distribution.—The Night Heron is very widely distributed. It nests plentifully in Southern and South-Eastern Europe, in Asia, in Africa, and in North and South America. On migration it has wandered beyond our Isles to the Faroes, Denmark and Sweden.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, nape of neck, and back, glossy greenish-black; rest of neck, wings and tail, grey; forehead and fine stripe over the eye, breast and abdomen, white; the crest is best developed in old males, and consists of three or more long, thin, white plumes; these are erectile, and when the bird becomes excited, they are raised, together with the shorter feathers of the crown, like those of an angry cockatoo. (Payne-Gallwey, 'Letters to Young Shooters,' Third Series, pp. 223, 224.)



FIG. 6.—HEAD OF NIGHT HERON. $\frac{2}{3}$ Nat size.

Adult female nuptial.—Duller in colour than the male, with a shorter head-crest.

Adult winter, male and female.—The long plumes of the crest are absent.

Immature, male and female.—Back and wings, nut-brown with lighter streaks and white spots; breast and abdomen striped with white, yellow and brown; crest absent.

BEAK. Black, the lower segment having a grey shade.

FEET. Yellow.

IRIDES. Bright red.

¹ The neck and dorsal-plumes of the Night Heron are not long and filamentous.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	23 in.
WING	...	...	...	12 „
BEAK	...	...	...	3 „
TARSO-METATARSUS	...	...	...	3 „
EGG	...	...	...	2 × 1·4 in.

Allied Species and Representative Forms.—*N. caledonicus*, with the upper parts of a bright cinnamon colour, is the representative in Australia and some of the neighbouring islands (Saunders).

LITTLE BITTERN. *Ardetta minuta* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 29; Dresser, 'Birds of Europe,' vol. vi, pl. 401; Lilford, 'Coloured Figures,' vol. vii, pl. 12.

This singular bird occurs as an irregular but not infrequent visitor in spring and summer to our Isles. It has been obtained in nearly every English county¹ (Saunders), chiefly in the southern and eastern districts, more rarely in the north and west. To Scotland it is a very uncertain visitor. It should, however, be borne in mind that owing to the protective coloration of its plumage, the extraordinary unbird-like attitudes which it assumes² and its skulking habits, no bird is more easily overlooked, even by the most expert and careful observer.³

Ireland has afforded us about thirty recorded occurrences of the Little Bittern. Most specimens proved to be immature, but seven adult males have been obtained. The following are the counties from which this species has been taken:—Kerry, Cork, Tipperary, Wexford, Carlow, Dublin,

¹ On June 30th, 1901, a Little Bittern was taken in a public park in Cornwall, with a broken leg. It probably struck the telegraph wire (H. W. Evans, 'Zoologist,' 1901, p. 354-5).

² "It often endeavours to escape notice by remaining motionless, with crossed legs, outstretched neck and bill pointing upwards; thus resembling a dry reed or a dead bulrush" (Saunders).

³ These remarks also apply to the Common Bittern.

Louth, Westmeath, Longford, Galway, Armagh, and Antrim.

Illustrative of the ease with which this bird might be overlooked, even on an open swamp devoid of cover, I quote the following interesting passage from Mr. Ussher's 'Birds of Ireland,' p. 165. It relates to a bird which was kept in captivity, and, owing to the extraordinary attitudes which it was wont to assume, some visitors failed to recognise its presence in the cage! The writer says: "When unconscious of observation it would walk about the cage with neck retracted, the head resting on its shoulders, or, if minnows were placed under its perch, it would shoot out its long neck, reaching down and capturing them with dexterity; but when approached it used to stand still and begin to elongate itself slowly, and while it stood previously about ten inches high, it now assumed a height of sixteen or more; its bill was then pointed upwards, its eyes being directed straight towards the intruder, and its neck and body stretched and compressed. In this position it looked so unlike a bird, that visitors, standing a few feet from it, have asked where it was."

Food.—During the day the Little Bittern hides in reed-beds or other available cover which is to be found on marshy ground, by the margin of river, or lake. At night it looks for its food, which consists of frogs, fish, snails, worms, and insects.

Voice.—The voice is a grunting croak, and the note may be syllabled, *gruck-gruck-groff*.

Nest.—The nest is built among sedges, of which it is mainly composed, but bushes and low trees growing near a bog are also utilised. The eggs, four, five, or more to the clutch, are dull white with a muddy grey-green tinge. Incubation begins about the middle of May.

Not so long ago the Little Bittern probably nested on the Broads of Norfolk, and elsewhere in England at an earlier period. A pair were observed at Rollesby Broad, Norfolk, during the months of May, June, and July, which fact affords strong evidence that they were breeding, provided they were not immature birds (Gurney, 'Zoologist,' 1894, p. 88, and 1895, p. 98).

Geographical distribution.—The Little Bittern nests in Southern Europe, Western Asia, Northern Africa, and the adjoining Islands. It has occurred as a wanderer to the Faroes, Iceland, and other Northern countries in Europe.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, back of neck and back, greenish-black; primaries and tail,¹ black, with a brownish tinge; rest of head, throat, neck, breast and abdomen, buff-colour, richer in shade about the neck and head; breast and flanks marked with a few dark stripes; wing-coverts, chiefly pale buff.

Adult female nuptial.—Brown shade on the head; rest of head and back of neck, yellowish-red; back, brown; wing-coverts, dark buff; breast and abdomen, buff, streaked with varying shades of brown.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Resembles the female, but the upper parts are duller in colour.

BEAK. Yellow.

FEET. Greenish-yellow.

IRIDES. Bright yellow.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	13	in.
WING	...	...	...	5	„
BEAK	...	...	...	1·10	„
TARSO-METATARSUS	...	...	...	1·75	„
EGG...	...	...	...	1·4 × 1	in.

Allied Species and Representative Forms.—*Ardetta podicipes*, smaller, with more rufous, is the South African representative; *A. sinensis* and *A. cinnamonea* are Eastern and Southern representatives. The former has a brown back. Allied species are also found in Australia and America.

¹ The genus *Ardetta* resembles the true Bitterns (*Botaurus*) in having only ten soft tail-feathers and two pair of powder-down tracts. Herons have twelve tail-feathers and three pairs of powder-down tracts (Saunders).

COMMON BITTERN. *Botaurus stellaris* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 27; Dresser, 'Birds of Europe,' vol. vi, pl. 403; Lilford, 'Coloured Figures,' vol. vii, pl. 13.

This remarkable-looking bird, easily recognised by its beautiful rich buff plumage, profusely barred and vermiculated with black, and also by the development of its neck-feathers, which form an erectile frill like that of the Ruff, once bred and was common in many districts of the British Isles. Its loud bellowing note was familiar to persons residing in the vicinity of the Norfolk Broads, the Cambridge and Lincolnshire Fens and other suitable districts in England and Wales, also over the low-lying marshy districts of which so large an area of Ireland is composed. But drainage and tillage have now restricted its breeding-haunts to such a degree that its nest is nowhere to be found, and it is a matter for much regret that many of the adult birds which reach us during the winter and might possibly remain to breed, are, in a large measure, shot even in the close season in spring. At present, the majority of Bitterns arrive annually in England and probably so in Ireland¹ as winter visitors, but in Scotland their appearance is much more irregular. Stragglers have reached the Outer Hebrides (a specimen having been taken on the coast of Harris, in January, 1890); while the Shetlands, and probably the Orkneys have also been visited (Saunders). The Bittern occurs most frequently in December and January, and with reference to this fact Mr. Ussher remarks that "it is singular that a species whose breeding-range is eastern and southern rather than northern should not appear usually in October, but chiefly in mid-winter, when we might expect the autumn migration to have ceased." In Ireland it has been recorded most frequently from the co. Cork. As an instance of a bird taken recently and early in the autumn, I may mention one which was shot on August 9th, 1900, on the sea-shore of the co. Down (R. Patterson, 'Irish Naturalist,' 1900).

In its general habits and in the localities which it frequents the Common Bittern resembles its smaller relative ;

¹ Mr. Ussher, however, states that the only place he can name where the Bittern seems to occur on an average once a year in Ireland, is in the marshes of Lord Castletown's property in Queen's County.

it is often startled from the reeds by the sportsman's dog, sometimes from a most shaky and dangerous quagmire which a man dare not traverse. It frequently alights on trees : in the co. Antrim in August, 1889, I witnessed a magnificent adult bird walking down the branch of a willow tree to the river's bank where it ultimately disappeared amidst the tall iris flags. The bird carried its head well sunk between the



FIG. 7.—COMMON BITTERN.

shoulders while its beak pointed in an upward direction ; its pace along the branch was slow and measured.

In close quarters, a wounded Bittern is a most ferocious creature ; it lies on its back watching its chance, and woe betide the man or dog who closes on it incautiously, for it can shoot out its neck and inflict an ugly stab with its dagger-like beak with surprising speed.

Voice.—The note, uttered by the male in the breeding-

season, is described by most ornithologists as 'bellowing' or 'booming'; it is deep and full, and carries a long distance. Mr. Harting, in confuting the fabulous ideas that the beak is stuck in the ground, in the water, or within a reed, states that when watching a Bittern 'bellowing' only ten yards off, he proved by observation that the beak "is pointed vertically upwards, resembling at a little distance a green reed stem amidst faded leaves" (Handbook Brit. Birds, 1901, p. 219). The wailing of the Banshee, one of the many apparitions which haunt the credulous minds of superstitious country-folk in Ireland, may have had its origin in the 'booming' of the Bittern, weird and strange when heard at a distance, after dusk and in the dead of night.

"For in the Bittern's distant shriek
I heard unearthly voices speak."

At other times of the year the note of the Bittern is harsh and one-syllabled, somewhat like that of the Heron.

Food.—The Common Bittern is almost omnivorous; it devours a considerable number of small mammals and birds as well as its more ordinary diet of fish, frogs, reptiles, snails and insects. It seeks its food principally at night.

Nest.—This species builds on the ground, on bog-lands and swamps, densely overgrown with reed-beds. The nest is generally well hidden from view; it is made chiefly of dry reeds and rushes, piled together into a considerable mass.

The eggs, usually four in number, are light brownish, often showing an olive-green tinge. Incubation begins early in April, sometimes at the end of March.

The latest date of the breeding of the Bittern in England, as given by Stevenson, 'Birds of Norfolk' and other writers, is March 30th, 1868, when a nest containing two eggs was discovered on Upton Broad, Norfolk. On May 25th of the same year a nestling was taken from the same place. But we have further evidence, though not absolute proof, of the Bittern breeding in the same district several years later, for, in August, 1886, "a young bird with down still adhering to it was obtained" (Saunders).

In Ireland the Bittern has ceased to breed since about 1840; Thompson mentions in his 'Natural History of Ireland,' vol. ii, that a female was shot off her nest with nestlings, in co. Tipperary, in August a few years before

1842. In the early part of the last century this species was resident in Ulster, Munster and Connaught (Ussher).

In the olden days the Bittern was very common in the East Anglian Fens; like the Heron it was esteemed a great delicacy, indeed a luxury for the Royal table, consequently this bird and its eggs were protected by law.

Geographical distribution.—The Bittern breeds in Southern Europe, Asia as far east as Japan, and North Africa, including the islands off the west coast. In spring it migrates as far north as lat. 60° in Europe and Western Asia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head and nape of neck, black; primaries and wing-coverts, barred with black and reddish-brown; ground-colour of the rest of the plumage, buff, barred and vermiculated with black; neck-feathers elongated, forming an erectile frill.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Primaries and wing-coverts, brownish.

BEAK. Greenish-yellow.

FEET. Bright green; toes, very long.

IRIDES. Yellow.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	28	in.
WING	...	...	...	13	„
BEAK	...	...	...	2·75	„
TARSO-METATARSUS	...	...	...	3·8	„
EGG	...	...	...	2·1 × 1·5	in.

Allied Species and Representative Forms.—*B. capensis* is the South African representative.

AMERICAN BITTERN. *Botaurus lentiginosus* (Montagu).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 28; Dresser, 'Birds of Europe,' vol. vi, pl. 404; Lilford, 'Coloured Figures,' vol. vii, pl. 14.

It seems to be the prevailing opinion among ornithologists that most of the American Bitterns recorded from our Isles, have, during their transit across the Atlantic Ocean, procured an assisted passage by resting on the riggings of vessels, for at least some part of their journey.

The first British bird of this species on record was killed at Piddletown in Dorset in 1804, and it is interesting to note that it was by means of this specimen that Montagu first distinguished the American Bittern as a new species.

The most recent specimen was procured from Maddens-town Bog, co. Kildare, shortly before February 20th, 1891 (Williams, 'Zoologist,' 1891, p. 218), and curiously enough, another had been obtained on the same bog on October 31st, 1889 (Scharff, 'Zoologist,' 1890, p. 26). The latter bird is preserved in the National Museum, Dublin.

Specimens have also been recorded from the following counties :—

England :—Kent, Sussex, Hampshire, Dorset, Devon, Cornwall, Lancashire, Yorkshire.

Wales :—Pembrokeshire and the island of Anglesea.

Scotland :—Dumfriesshire, Elgin, Aberdeenshire, Caithness, and the island of Islay.

Ireland :—Londonderry, Down, Armagh, Louth, Kildare, Carlow, Wexford, Tipperary, Cork.

Two interesting points may be mentioned in connection with these occurrences: in the first place they nearly all (with the exception of the bird taken at Dumfriesshire on March 25th, 1878), took place between October and February, a period of the year when the bird annually migrates (Saunders), and secondly, as pointed out by Mr. Ussher, four of the Irish specimens were taken in Leinster "and five in inland counties, far from where we might expect they would have landed from America."

Flight.—Like that of its congeners, the flight of this bird is slow and not particularly buoyant.

Voice.—The voice, uttered in the breeding-season by the male, is deep and croaky.

Food.—The food consists of small reptiles, frogs, mammals and worms.

Nest.—The nest is built on the ground and is composed of reeds and other vegetation; the eggs are dun-brown in colour, and four to seven constitute the clutch.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—The plumage of the American Bittern differs from that of the Common species in the finer and more profuse barring and streaking of the back and wings; the primaries are uniform greyish-brown.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—The general tinge is redder and the markings are coarser than in the adult plumage.

BEAK. Upper segment greenish-black, edged below with yellow, lower segment lemon-yellow.

FEET. Dull yellowish-green.

IRIDES. Sulphur-yellow next the pupil, shading exteriorly to deep orange, encircled narrowly with black.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	24 in.
WING	...	...	...	11 „
BEAK	...	...	...	3 „
TARSO-METATARSUS	...	...	...	3.5 „
EGG	...	...	...	1.9 × 1.45 in.

Allied Species and Representative Forms.—"A specimen of the American *Butorides virescens*, said to have been shot in Cornwall in October, 1889, was exhibited at the Linnean Society in April, 1890, by Sir C. Sawle. (*Cf.* Zool. 1890, p. 105 and p. 181.)" (Saunders, *Man. Brit. Birds*, 2nd edit., p. 386.)

Family CICONIIDÆ.

WHITE STORK. *Ciconia alba* (Bechstein).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 30; Dresser, 'Birds of Europe,' vol. vi, pl. 405; Lilford, 'Coloured Figures,' vol. vii, pl. 15.

This fine-looking bird, so familiar a feature in our Zoological Gardens, is but a rare and uncertain visitor, chiefly in spring and autumn to the British Isles. East Anglia has furnished us with by far the most records—over thirty in number—and this is as we should expect on account of the proximity of that part of England to Holland, where the bird is common. On the west side of Great Britain the White Stork is very rare. Among recent occurrences may be mentioned a flock of six which were seen flying over the town of Newbury in Berkshire, on April 23rd, 1884 (Saunders), also a tired-out individual which was seen resting on a house-top at Great Yarmouth, on June 26th, 1892 (A. Patterson, 'Zoologist,' 1900, p. 414).

In Scotland the White Stork has very seldom been procured or even observed, but it has wandered to the north of that country, for in July, 1865, two were taken in the Shetlands (Harting).

To Ireland its visits are very exceptional. In comparatively recent times only three examples have been obtained. One was taken near Fermoy, co. Cork, about the end of May, 1846 (Thompson, Nat. Hist. Ireland, vol. ii, p. 175). It is preserved in the Queen's College Museum, Cork. In the autumn of the same year another was obtained near the sea-shore of Wexford (Watters, 'Birds of Ireland,' p. 138). A third was taken near Hop Island on the River Lee, co. Cork, on August 7th, 1866 (Hackett, 'Field,' September 22nd, 1866).

Mr. J. W. Young states that he saw a White Stork on the wing between Athy and Stradbally, in the Barrow Valley, on April 20th, 1895 (Ussher, 'Birds of Ireland,' p. 170).

For an account of the allusions made by early writers to Storks in Ireland, the reader is referred to Mr. Ussher's 'Birds of Ireland,' p. 170.

The Stork in a state of nature is a most interesting bird ; if unmolested it grows very tame. I have noticed it in Germany and Switzerland walking about the corn-fields and meadows while the men were working close by. I have seen it perched contentedly on the farmers' cottages and haystacks, and this bird has been observed even walking about the streets, especially in the early morning, before traffic becomes general. These habits may be observed within easy reach of the British Isles ; a trip

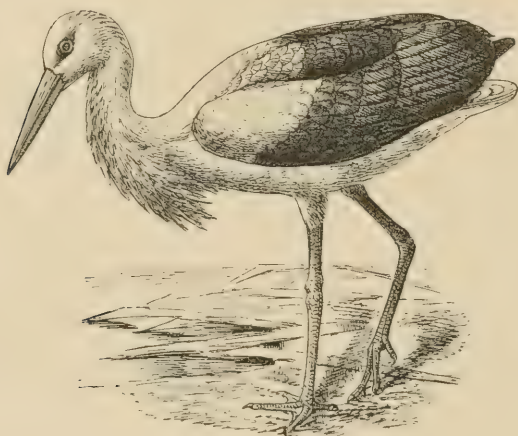


FIG. 8.—WHITE STORK.

to Holland or Germany would well repay the bird-lover who wishes to make himself acquainted with the habits of the White Stork.

Flight.—Storks together on the wing look beautiful, especially when they soar upward until their white forms, gradually growing less bird-like, ultimately seem to become transfigured into portions of the surrounding clouds. The flight, though slow, is buoyant and sustained, and the great size of the bird renders it a most imposing-looking creature.

Voice.—Neglecting the extraordinary habit which the

Stork has of clattering its mandibles in the breeding-season, thereby producing a considerable sound, the bird may be said to be quite voiceless. In captivity I have never heard it emit a note.

Food.—The Stork feeds on almost anything. It paces quietly through the meadows snatching up worms, insects, etc., while small mammals and birds which perchance cross its path, are greedily demolished. It also retires to marshy districts to catch fish and frogs, while at other times it will enter the streets and by-ways and pick up garbage. The parent bird feeds its offspring somewhat after the fashion of pigeons, by inserting its beak into the mouth of the nestling which receives the disgorged food.



FIG. 9.—HEAD OF WHITE STORK. $\frac{1}{3}$ Nat. size.

Nest.—Where encouraged to breed, the White Stork builds on public edifices, such as towers and church belfries in towns, as well as on farm-stacks and in trees close to human habitation. In more hostile districts this species retires to cliffs, lofty rock-ledges, and high trees. The nest is built of sticks, and the original structure is added to yearly. The eggs are milk-white, the yolk is deep orange and the lining membrane yellow. Three to five constitute the clutch.

Incubation begins about the end of March or early in April.

In the nuptial season Storks may be seen dancing about with extended wings in a most absurd manner, these love-antics may be witnessed in most Zoological Gardens.

It cannot be said with certainty that the White Stork

has ever nested in England, but it is interesting to note that a bird was shot about May 17th, 1861, at Woodbastwick in Norfolk, containing "an egg ready for exclusion which was cracked by the fall of the bird" (Saunders, Man. Brit. Birds, 2nd edit., p. 387).

Geographical distribution.—The White Stork breeds in many countries in Central and Southern Europe as well as in Western and Central Asia, including India; also in North Africa. Its spring migration extends to Norway, and when journeying south in autumn this bird visits Asia Minor and Palestine in immense flocks. Westward it wanders to the Canaries, occurring as a summer migrant in North Africa. In winter it migrates in great numbers through Egypt southward to Cape Colony.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Pure white, except the primaries which are black, frosted with grey.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Resembles the adult except that the primaries are dull black.

BEAK. Red.

FEET. Red.

IRIDES. Dark greenish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	40	in.
WING	...	...	...	23	„
BEAK	...	...	...	8·25	„
TARSO-METATARSUS	...	...	...	8·8	„
EGG	...	...	...	2·8 × 2·1	in.

Allied Species and Representative Forms.—The Eastern representative, with a black beak, found in China and Japan, is *C. boyciana*.

BLACK STORK. *Ciconia nigra* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 31; Dresser, 'Birds of Europe,' vol. vi, pl. 406; Lilford, 'Coloured Figures,' vol. vii, pl. 16.

This very rare British visitor has been obtained between the months of May and November in the following counties:—Devon, Somerset, Dorset, Kent, Middlesex, Oxfordshire, Essex, Suffolk, Norfolk, Yorkshire, Durham, and also in the Scilly Isles.

The earliest record is that of a bird captured at West Sedgemoor, Somerset, on May 13th, 1814. This specimen is preserved in the British Museum. The most recent capture appears to be that of an adult male from Northolt, Harrow, Middlesex, obtained on July 25th, 1893 (Harting, *Handbook Brit. Birds*, 1901, p. 439). From Scotland or Ireland there are no authentic records.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Black, with a play of colours shading from purple to lustrous metallic-green, except the lower breast and abdomen, which are white.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Dull metallic-brown, the feathers being margined with impure white; breast and abdomen, white.

BEAK. Bright red.

FEET. Red.

IRIDES. Dark brown.

EGGS. Shell rough in texture; greyish-white in colour, lining membrane green, which is seen when the egg is held up to the light: clutch, four to five.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	38	in.
WING	...	...	...	21	„
BEAK	...	...	...	7.75	„
TARSO-METATARSUS	...	...	...	8.25	„
EGG	...	...	...	2.6 × 2	in.

Family IBIDIDÆ.

GLOSSY IBIS. *Plegadis falcinellus* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 47; Dresser, 'Birds of Europe,' vol. vi, pl. 409; Lilford, 'Coloured Figures,' vol. vii, pl. 17.

Over a hundred years ago the Glossy Ibis visited Great Britain and Ireland in sufficient numbers to be known by gunners and fishermen as the 'Black Curlew.' At the present day it is a rare and an irregular migrant in autumn, and still more so in spring. It has been recorded chiefly from the south-eastern and southern sections of England and from corresponding districts of Ireland.

Perhaps the earliest recorded Glossy Ibis from Great Britain was shot on September 28th, 1793. It was flying at the time, in company with another, over the Thames, between Henley and Reading. Latham (1790) also refers to one shot in Cornwall, and preserved in the Leverian Museum. Among specimens taken quite lately, may be mentioned one shot at Saltash, Devon, on October 4th, 1900 (Harting), another on November 25th of the same year, near Stockton-on-Tees, in Durham (T. H. Nelson, 'Zoologist,' 1901, p. 185), a fine adult male obtained between Pevensey and Bexhill, in Kent or Sussex, on October 25th, 1902 (N. F. Ticehurst, 'Zoologist,' 1903, p. 419), and an immature bird taken in Norfolk, August, 1903 (J. H. Gurney, 'Zoologist,' 1904, p. 203).

As a visitor to Scotland the Glossy Ibis is very rare. According to Mr. Saunders six examples have been obtained: of these, one came from Kirkwall in the Orkneys, and one from Unst in the Shetlands. Mr. Harting mentions one from the river Ythan, Aberdeenshire, obtained in October, 1880. With regard to Ireland, Mr. Ussher estimates that there have been twenty-two or more records, specimens having been obtained from midland, as well as from maritime counties. The early records date back to

1818, when Thompson states that Ibises were killed in Wexford, while as recently as October, 1902, others were procured from cos. Clare and Wexford (E. Williams, 'Irish Naturalist,' 1903, p. 112). Prior to these occurrences, no Glossy Ibis was recorded from Ireland since those mentioned by Sir R. Payne Gallwey in 'The Fowler in Ireland,' published in 1882.

The following are the counties where specimens have been taken:—Clare, Kerry, Cork, Waterford, Wexford, Dublin, King's County, Westmeath, Longford, Antrim.

The Ibis, though shaped like the Curlew and possessing a long, slender, decurved beak, has no affinities with that bird, being really related to the Storks and Spoonbills.

Flight.—On the wing the Glossy Ibis is strong, and as it flies, "the pinions are first moved rapidly, and produce a whizzing sound, after which the bird skims for some distance" (Saunders).

Food.—When sojourning in our Isles, this species feeds on such small creatures as are found about sandy shores and muddy estuarine flats, *e.g.*, sand-eels, crabs, shrimps, worms, etc.: in warmer countries locusts and other insects, also scorpions, are eaten.

Nest.—In the breeding-season the Glossy Ibis is gregarious. The nest, made of twigs and reeds, is built in trees and low bushes, and generally near marshes and water. The eggs, three to four, are dark greenish-blue, and the shell is slightly pitted.

Geographical distribution.—The breeding-range of the Glossy Ibis in Europe extends from Spain to the Caspian Sea, and its most northern colonies are in Slavonia. It is found over a large area of Asia, breeding as far south as Ceylon. It also nests in North Africa, migrating to Natal. On the northern migration few birds proceed north of the Alpine ranges, though stragglers have been obtained from the Faroes, Iceland, Scandinavia, Denmark, Norway and Sweden. In winter this species roams to Australia and South Africa.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head, neck, breast and abdomen, dark reddish-brown; back, wings, and tail, brownish-black with a lustre of green and purple.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Head and neck streaked and blotched with greyish-white, and the plumage exhibits no gloss.

BEAK. Brown and decurved.

FEET. Brown.

IRIDES. Hazel; bare skin round the eyes, greenish-grey.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	22	in.
WING	...	...	...	10·75	„
BEAK	...	...	...	5	„
TARSO-METATARSUS	...	...	...	4	„
EGG	...	...	...	2 × 1·5	in.

Allied Species and Representative Forms.—*P. guarana*, with the feathers which surround the bare space on the forehead edged white, is the American representative, but the Old World bird has been found in the Eastern United States.

Family PLATALEIDÆ.

SPOONBILL. *Platalea leucorodia* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 32; Dresser, 'Birds of Europe,' vol. vi, pl. 407; Lilford, 'Coloured Figures,' vol. vii, pl. 18; Booth, 'Rough Notes,' vol. ii, pl. 16.

This curious bird, though not sufficiently regular and widespread to be included among our annual British migrants, is nevertheless observed in some districts practically every spring, sometimes appearing even in small flocks. East Anglia is its chief resort, especially along the Norfolk coast. From statistics furnished by Mr. J. H. Gurney, we find that for twelve summers, dating back from 1900, ninety-three Spoonbills visited Breydon (Norf. Nat. Hist. Soc., vol. vi.). In the 'Zoologist' for 1900, p. 415, Mr. A. Patterson writes that sixteen were seen on May 13th, 1894; twelve on May 5th, 1895; six on May 10th, 1899; twelve on June 4th, 1900, and subsequently several others; while on p. 323 he states that one was seen on June 7th, and two on June 9th, 1900. Then again, in the 'Zoologist' for 1901, p. 269, the same writer publishes a most interesting note, in which he shows that, between early April and June 21st, 1901, Spoonbills were seen almost daily at Breydon. The details of his observations are as follows:—

During April:—One seen on the 10th, twelve on the 27th, and five on the 28th.

During May:—Seven seen on the 7th, two on the 16th, two on the 17th.

During June:—Two seen on the 2nd, four on the 7th, five on the 15th, and four on the 21st. Many of these birds were very tame, allowing of near approach. It is obvious, from these valuable data, that this species is still a frequent spring visitor to the neighbourhood of Great Yarmouth.

North of Yorkshire (a county which has yielded some nine specimens), the Spoonbill is of rare occurrence, and

except on the flats of Cardigan Bay and in Pembrokeshire, it is seldom recorded from the west side of Great Britain. Prof. Salter, in his 'Birds of Aberystwith,' mentions that fourteen Spoonbills were seen on the river Dovey on May 16th, 1893. In the southern counties the Spoonbill appears at irregular intervals. One was shot in Surrey on November 26th, 1901 (Gordon Dalglish, 'Zoologist,' 1902), none having been recorded from that county since 1862 (Bucknill, *ibid.*, p. 306). On September 25th, 1902, another was shot in Sussex (N. F. Ticehurst, 'Zoologist,' 1903).

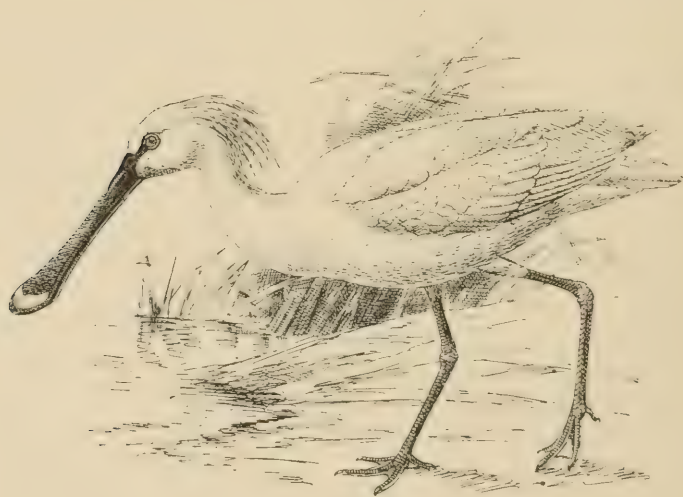


FIG. 10.—SPOONBILL.

Few Spoonbills wander to Scotland. Mr. Harting mentions a flock of ten which visited the Bay of Kirkwall in the Orkneys in October, 1859; six were shot. Specimens have also been procured from the Shetlands and the Inner Hebrides (Saunders). To Ireland this species is a rare and uncertain visitor, appearing chiefly in autumn and winter. It has been recorded about thirty-three times, and most often from the south. The first specimen, however, was taken near Belfast, about the beginning of the last century (Thompson). On December 16th, 1890, one was obtained in the co. Galway, while a specimen procured in the co.

Waterford on November 5th, 1891, appears to be the latest capture (Ussher). The remaining counties from which examples have been obtained are:—Clare, Kerry, Cork, Wexford, Wicklow, Dublin, Mayo. It will be seen that hitherto the Spoonbill has been taken only in maritime counties.

In its general habits it may be said that the Spoonbill is sociable and amicably disposed to other species. Several may be seen feeding on the sea-shore in company with gulls and small waders, and I can state from personal observation that the Spoonbill will live peacefully in captivity, with smaller birds. It is easily tamed, and makes a curious and quaint-looking pet. In a state of nature it is not usually a wary bird, though Watters mentions that a flock, observed many years ago on the marshes of the co. Wexford, "exhibited such wariness as not to admit of sufficient approach to obtain one" ('Birds of Ireland,' p. 140).

Flight.—The flight of the Spoonbill is somewhat heavy, and the beats of the wing regular. When flying, the legs of this species are fully extended and the neck slightly inclined upwards.

Voice.—Like the Stork, the Spoonbill is generally supposed to be voiceless, but Mr. R. B. Lodge has heard it utter a few low notes when flying round its nest (Saunders), and Mr. J. H. Gurney has noted that in confinement a pair began a feeble duet on a warm day, all the while moving their necks up and down ('Zoologist,' 1900, p. 104-5).

Food.—Along the sea-shore the Spoonbill feeds on shell-fish, crabs, shrimps, and small fish; while inland it eats frogs, worms, and insects.

Nest.—This species breeds in colonies both in trees and on the ground. In the latter situation the nest may be a heaped-up mass of reeds surrounded by water. In all cases it is a bulky structure. The eggs, four to six in number, have a rough shell which is dull white streaked and spotted with dark reddish-brown.

In days gone by, when the Spoonbill nested in England, it was known as the Popeler, also the Shovelard or Shovelar. Norfolk appears to be the oldest breeding-county on record, Spoonbills having nested there in the twelfth century. The eggs, like those of the Heron and other birds, were protected by law, and a heavy penalty was imposed on any one who was convicted of stealing them.

Professor Newton in his 'Dictionary of Birds,' p. 900,

gives a most interesting *resumé* on the former breeding of the Spoonbill in England. He writes: "The *Calendar of Patent Rolls* of Edw. I. shews (p. 546) the issue in 1300 of a commission to enquire who carried off the eyries of these birds ("*poplorum*") at several places in Norfolk, and Mr. Harting (*Zool.* 1886, pp. 81 *et seqq.*) cites a case from the "Year-Book," of 14 Hen. VIII. (1523), wherein the Bishop of London (Cuthbert Tunstall) maintained an action of trespass against a tenant at Fulham for taking Herons and "Shovelars" that made their nests on the trees there, and has also printed (*Zool.* 1877, p. 425) a document shewing that "Shovelers" bred in certain woods in west Sussex in 1570. In George Owen's *Description of Pembrokeshire*, written in 1602 (ed. 1892, p. 131), the "Shovler" was stated to breed "on highe trees" in that county, and nearly sixty years later (*circa* 1662) Sir Thomas Browne, in his *Account of Birds found in Norfolk* (*Works*, ed. Wilkin, iv, pp. 315, 316), stated of the "*Platea* or *Shouelard*" that it formerly "built in the Hernerie at Claxton and Reedham, now at Trimley in Suffolk." This last seems to be the latest known proof of the breeding of the species in England; but that it was in the fullest sense of the word a "native" of England and Wales is thus incontestably shown."

Geographical distribution.—The Spoonbill breeds in many countries in the south and south-east of Europe, as well as in Holland. In India it is a familiar nesting-species, and it is found in many other countries of Southern as well as Central Asia. It also breeds in North Africa and the adjoining Islands. On its vernal migration it seldom reaches north of the latitude of the British Isles. This species was first obtained in Heligoland on July 14th, 1892 (Saunders).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Pure white, except a tinge of yellow on the front of the neck and head-plumes.

Adult female nuptial.—Similar in plumage to the male, but the crest is shorter.

Adult winter, male and female.—The head-plumes are absent.

Immature, male and female.—Shafts and tips of primaries, black; head-plumes, absent.

BEAK. Black, barred and tipped towards the end with yellow ; expanded and much flattened at the extremity.

FEET. Black.

IRIDES. Red.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	36 in.
WING	...	...	...	14·5 „
BEAK	...	...	...	8·5 „
TARSO-METATARSUS	...	...	...	5·5 „
EGG	...	...	...	2·5 × 1·8 in.

Allied Species and Representative Forms.—*P. cristata*, with red legs, inhabits South Africa, *P. mino*, a smaller species, is the Eastern representative, while *P. regia*, with black beak and feet, and *P. flavipes*, with yellow beak and feet, are the Australian representatives (Newton).

“The Roseate Spoonbill of America belongs to a different genus, *Ajaja*” (Saunders).

Order ODONTOGLOSSÆ.

Family PHÆNICOPTERIDÆ.

FLAMINGO. *Phœnicopterus roseus* (Pallas).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. vi, pl. 410;
Lilford, 'Coloured Figures,' vol. vii, pl. 19.

This remarkable-looking bird, breeding in Southern Europe, North Africa, and Asia, often migrates even in flocks to countries in Europe of the latitude of the British Isles, so that its visits are not *primâ facie* improbable; in fact it should not be surprising to hear of more instances of its occurrence in the British Isles than have heretofore been recorded. One was secured in the Isle of Sheppey on August 16th, 1873, which may have been a specimen which escaped from the London Zoological Gardens on July 19th (Saunders). Another, an adult, was obtained in Staffordshire early in September, 1881. A third was taken in Hampshire outside the Beaulieu River, on November 26th, 1883.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Except the wing-coverts which are brilliant scarlet, and the primaries which are black, the general tinge of the plumage is a delicate pinky-white.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Only a slight trace of pink on the wings, which are irregularly barred with black. The downy nestling is greyish-white.

BEAK. Basal portion pink, distal portion black, and sharply bent downward.

FEET. Rich pinkish-red.



FIG. 11.—FLAMINGO.

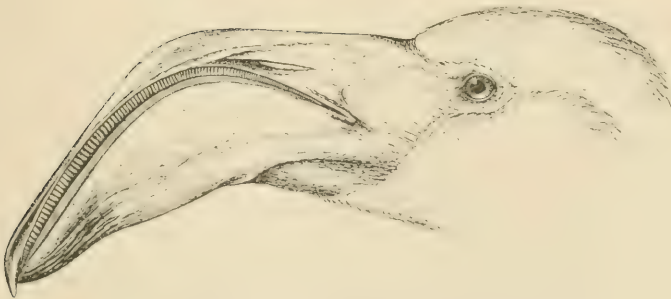


FIG. 12.—HEAD OF FLAMINGO. $\frac{1}{2}$ Nat. size.

IRIDES. Yellow.

EGGS. Greenish-blue, covered with a chalky-white coating: clutch two.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	55	in.
WING	...	...	...	16	"
BEAK	...	...	...	5.25	"
TARSO-METATARSUS	...	...	...	13	"
EGG	...	...	...	3.6	× 2.25 in.

Order ANSERES.

Family ANATIDÆ.

GREY LAG-GOOSE. *Anser cinereus* (Meyer).

Coloured Figures.—Gould, ‘Birds of Great Britain,’ vol. v, pl. 1; Dresser, ‘Birds of Europe,’ vol. vi, pl. 411; Lilford, ‘Coloured Figures,’ vol. vii, pl. 20; Booth, ‘Rough Notes,’ vol. iii, pl. 1; Alpheraky, ‘Geese of Europe and Asia,’ pl. 3.

The Grey Lag is the largest of the ‘Grey’ Geese, which visit the British Isles. The numbers which arrive annually, as winter migrants, fluctuate considerably; but, on the whole, this Goose is not a numerous species. It is met with in Ireland and Scotland more frequently than in England and Wales. It usually appears about October, and in some districts does not take its departure until the end of April or the beginning of May. The Grey Lag-Goose appears to be the ancestral stock from which our farm-yard bird has sprung; the latter not only approaches it nearly in size and build, but also in certain plumage markings which are often reproduced; while the former is readily tamed and will live in harmony with domestic geese.

‘Gaggles’ of Grey Lag-Geese may be seen marching along pasture-land, eagerly plucking the grass and clover. This habit, also strongly developed in our farm-yard bird, is not confined to the species under consideration; in fact, geese, as a race, are very fond of grass, and will ‘graze,’ by preference, for a considerable time on the embankment of an ornamental lake, where, in a state of captivity, they are supplied amply with all sorts of good food.

I have observed flocks of this species rise at dusk from the sea, where they were resting during the greater part of the day, and fly inland to feed on a marsh.

On a few occasions I have watched them, from ambush, feeding in the noon-day. One, two, or perhaps three birds will act as sentinels, taking up their positions at the edge of the flock. The sentinels appear to eat but little; they keep their heads up and necks stretched, and peer sharply around until relieved of their duties by other members of the flock. Some authorities are of the opinion that the sentry-goose keeps up a low muttering cackle, becoming silent only when danger threatens, and that by this means he attracts the attention of the flock. Other observers state that an alarm-note is not given by the sentry until he perceives danger. I have not heard a distinct cry of alarm from the sentry when I have suddenly appeared from under ambush, though in almost every case the birds looked up and peered anxiously around prior to taking flight. I have noted, however, that as long as I lay concealed in a ditch and completely out of view of the birds, voices, not from the sentinels alone, but from several individuals of the flock, were to be heard.

Voice.—The voice of the Grey Lag, when alarmed, is loud and harsh; some of its notes are pitched lower than others. The ‘cackling,’ which seems to denote confidence among the flock that no enemy is in sight, is softer and more modulated in tone. It is not unlike the ‘cackle’ of our domestic bird.

Flight.—The Grey Lag-Goose is strong on the wing; when taking long journeys a flock will assume the form of the letter V, which is characteristic of the flight of many other species of geese.

Food.—The chief food is grass; but grain, ripe and unripe, is also eaten.

Nest.—The nest is usually placed in heather, of which it is largely composed. In marshy places it is formed of moss and reeds; it is lined thickly with down plucked from the mother’s breast. The eggs, five to six in number, are dull yellowish-white. They are laid about the middle of April, and at the onset of incubation the males congregate, and leaving the females, take to the nearest water in the vicinity.

The Grey Lag is the only species of Wild Goose which breeds in a state of nature in the British Isles. It formerly bred in the fens of Cambridgeshire and Lincolnshire, nestlings having been taken from the first-mentioned county up to 1773, while in the latter county, breeding continued until the beginning of the succeeding century (Saunders).

This species is supposed to have bred in Ireland during

the eighteenth century (Ussher). In Scotland it nests in Caithness, Ross-shire, Sutherland and the Outer Hebrides.

In North Uist it has nested on one occasion 700 feet above the sea-level (Harvie-Brown).

Geographical distribution.—Abroad, the Grey Lag-Goose breeds chiefly in the northern countries of Europe and Asia, viz., Iceland, Russia, Scandinavia, Holland, North Germany and Siberia. On its southern migration, it is widely distributed over Central and Southern Europe and Temperate Asia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male¹ nuptial.*—Head, neck, back, wings and tail, greyish-brown; base of beak surrounded by a few small white feathers; breast and front of neck, pale brown; lower breast and abdomen, dull white; upper tail-coverts and wing-coverts, bluish-grey; abdomen marked with a few small transverse bars of black.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Back darker, and head and neck lighter than those of the adult; black spots absent from the abdomen.

BEAK. Flesh-colour; tipped with a white 'nail.'

FEET. Flesh-colour.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	34	in.	Female smaller.
WING	...	17.5	„	One inch or so shorter in the female.
BEAK	...	2.5	„	
TARSO-METATARSUS	...	2.75	„	
EGG	...	3.5	× 2.4 in.	

Allied Species and Representative Forms.—*A. rubrirostris* is the form which, in winter, migrates to Tropical Asia.

¹ In the Geese and Swans (Genera, *Anser*, *Chen*, *Bernicla*, and *Cygnus*), the adult plumage of both sexes is alike, or in some species with only minor differences, and without seasonal changes. In this respect they differ markedly from the Ducks.

WHITE-FRONTED GOOSE. *Anser albifrons* (Scopoli).

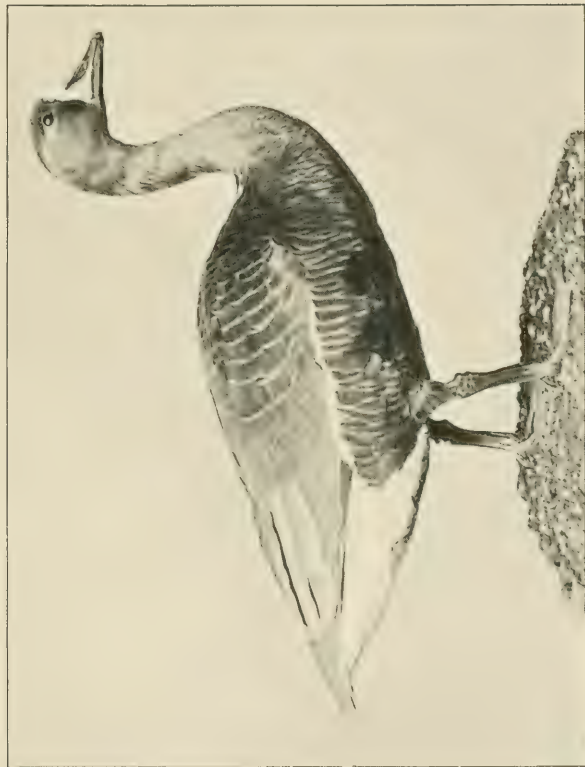
Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 4; Dresser, 'Birds of Europe,' vol. vi, pl. 414; Lilford, 'Coloured Figures,' vol. vii, pl. 21; Alpheraky, 'Geese of Europe and Asia,' pl. 4.

The White-fronted is smaller than either the Grey Lag or Bean-Goose, and its plumage is handsome and variegated. It derives its name from a rather conspicuous white patch on the forehead, but at a distance, this is not by any means the most distinguishing feature of the coloration.

The White-fronted Goose is most easily identified among a mixed assemblage of geese, by the broad jet-black bars which traverse its breast. These beautiful markings have given rise to the popular name of 'Tortoise-shell Goose' as applied to this species.

It is very interesting to watch a large gathering or 'gaggle' of these birds. As a rule they can only be observed in the distance and by means of a binocular, as they are shy and watchful. Sometimes the flock may consist of more than one species of goose. For instance, I recollect seeing numbers alight on a marsh in a valley on the wild coast of western Kerry. I made my observations on a hill-side about a quarter of a mile away. To the best of my belief, the flock consisted of some fifty birds, out of which over forty were White-fronted, and the remainder Bean-Geese.¹ Two of the latter species appeared to act as sentinels. It took me fully half an hour to distinguish the two species, for it was necessary to watch through my binocular until each bird, in turn, faced me so that the transverse black bars, or the absence of such, on the breast, could be discerned. Continuing my observations, I noted how the birds slowly paraded through the marshy grass. Most of them were heading in the same direction, and now and then one would halt to preen its feathers, while a few others steered leisurely across a muddy pond; the greater part of the flock, however, were engaged in feeding, but a few were resting, each supported on one leg. As the birds

¹ It might be suggested that the supposed Bean-Geese were only the sombre-plumed immature White-fronted Geese. But this is unlikely for two reasons, (a) immature birds do not act as sentinels to the flock, (b) the numbers of adults in a flock would hardly exceed the immature birds to such an extent.



WHITE-FRONTED GOOSE (Male).

approached the edge of the tide the sentinels appeared to grow less anxious, and bending their necks towards the water, commenced to feed on the surface.

This species is, with the exception perhaps of the Brent, the most abundant of the Wild Geese which visit Ireland, and the one most frequently exposed for sale in poulterers' shops. The Bean-Goose is more common in England. The White-fronted is easily tamed and thrives well in captivity. Illustrative of the affection which this bird may foster for other animals, I cite an incident concerning a White-fronted Goose, a cat and a retriever dog. The bird grew so fond of these animals that it was permitted to sleep and feed in the same outhouse. The case is remarkable as the dog had previously retrieved the bird, winged by a sportsman, from the water, and dragged it ashore, shaking it considerably before landing it at the gunner's side. The bird must have been strong to have survived such treatment, however, it recovered and lived for several years. The White-fronted Goose has repeatedly bred in captivity and hybrids have been raised. The flesh, especially that of the young bird, is well flavoured if the bird is in good condition. Some authorities think that this species has close ancestral affinities with our tame bird.

Flight.—The flight resembles that of the Grey Lag.

Voice.—The note is a harsh croak.

Food.—This Goose 'grazes' to a large extent in fields of short grass and clover, but other vegetable substances, including seaweeds, are also eaten.

Nest.—The site of the nest and the materials used for its construction, do not differ to any extent from those of the last species. The eggs, five to seven in number, are creamy-white. Incubation begins in June.

Geographical distribution.—This Goose nests in Northern Russia, Iceland and Arctic Siberia. It is plentiful on the lower Yenesei (Popham) and according to Middendorff, it is the most common Goose in the Taimyr district. On passage, in winter, it is widely distributed over the Continents of Europe and Asia, reaching India, Egypt and Nubia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Encircling the base of the beak is a broad white band; head, neck, back, wings and tail, brownish; breast and abdomen, brownish-white and

handsomely marked with transverse black bars which vary greatly in amount, some individuals having the under-parts entirely black.

Adult female nuptial.—The black on the breast is less conspicuous than in the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Breast-bars, and white at the base of the beak absent; rest of the plumage darkish-brown. In young males the breast-bars are sometimes traceable.

BEAK. Orange-yellow, tipped with a white 'nail.'

FEET. Orange-colour; toe-nails, horn-colour.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	27	in.
WING	...	...	...	16	„
BEAK	...	...	...	2	„
TARSO-METATARSUS	...	...	...	2.5	„
EGG	...	...	...	3 × 2	in.

Allied Species and Representative Forms.—A smaller form, the Lesser White-fronted Goose, *A. erythropus*, with darker plumage, breeds in Scandinavia; while a large variety, *A. gambeli*, with very distinct black bars on the breast, and more black on the abdomen and flanks than our bird, nests in Arctic America, including Greenland.

BEAN-GOOSE. *Anser segetum* (J. F. Gmelin).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 2; Dresser, 'Birds of Europe,' vol. vi, pl. 412; Lilford, 'Coloured Figures,' vol. vii, pl. 22; Alpheraky, 'Geese of Europe and Asia,' pl. 11.

This Goose is, in all probability, the most numerous of the 'Grey' Geese which visit our Isles, although as already mentioned, the White-fronted and Grey Lag are more often met with in Ireland; the Bean-Goose is scarcer in Scotland than elsewhere in the British Isles. It arrives on our shores in autumn and leaves in spring. Owing to its extreme wariness, it is rather difficult to identify in its

natural haunts and its sombre brownish-grey plumage renders it inconspicuous, when standing on dark marshy ground, meadow-pasture, or corn-fields. It can be most easily approached when feeding in company with other species of Geese. Although extremely shy in its wild state, the Bean-Goose is easily tamed and often displays great affection for domestic animals and inmates of the farmyard.

The Bean-Goose resorts chiefly to situations away from the tide, but its movements are much influenced by the weather. It is not a hardy bird, and cases are on record of its capture in a semi-starved condition during or after continued hard frosts. In some localities, large flocks resort at night to tidal waters on which they rest until daylight.

Food.—This species, though mainly herbivorous, is nevertheless destructive to crops of grain, such as wheat and oats, acres of which a flock will devastate in a short space of time. The Bean-Goose, like its congeners, is an expert ‘grazer,’ cutting the grass with its sharp beak as neatly as if done by a machine. A male sentinel bird is said to guard the flock when feeding, and, until relieved of his duties by another, he does not lower his head to feed. It has been stated that when the sentinel wishes to feed he pecks vigorously at another member of the flock, who seems to understand, from this gentle reminder, that his turn has come to protect the rest. The flesh of this bird is well flavoured and compares favourably with that of other Geese.

Voice.—The voice of this Goose is loud and hoarse, being not unlike that of the preceding species.

Flight.—It is difficult to distinguish this bird on the wing from other ‘Grey’ Geese, and its flight is equally powerful and sustained.

Nest.—The nest resembles that of the preceding species both in situation and construction. The eggs, about six in number, are dull cream colour. Incubation takes place about the middle of June.

Geographical distribution.—The distribution of the Bean-Goose in the nesting-season extends over a considerable portion of Northern Europe. It breeds in Sweden, Scandinavia, Norway, Russia, the Islands of Novaya-Zemlya (where it is abundant), the Yenesei and other Russian rivers. The late Mr. Seeböhm found it nesting on the ‘tundras’ of the Petchora. On migration, in the cold season, the Bean-Goose visits the European Continent as far south as

the Mediterranean. It is common in Russia, and is found also in Western Asia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—The general shade of the plumage is greyish-brown, but darker than that of the other 'Grey' Geese; the black patches are absent from the breast and abdomen, and the greyish-blue from the wings, so that the Bean Goose is a sombre-coloured bird. A few small white feathers are scattered round the base of the beak.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Darker in colour than the adult (except the neck which is tawny) and with less distinct markings.

BEAK. Black at the base and tip; dark yellow in the centre.

FEET. Pinkish-yellow.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	34	in.	Female smaller.
WING	...	...	19	"	
BEAK	...	...	2.4	"	
TARSO-METATARSUS	...	...	2.6	"	
EGG	...	...	3.2	×	2.2 in.

Allied Species and Representative Forms.—*A. serrirostris*, with a yellowish-brown shade in the head and neck, and of a larger size, is the Eastern representative.

Note.—The Bean-Goose is as long in the body as the Grey Lag, but is of a more slender build and lighter in weight.

PINK-FOOTED GOOSE. *Anser brachyrhynchus* (Baillon).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 3; Dresser, 'Birds of Europe,' vol. vi, pl. 413; Lilford, 'Coloured Figures,' vol. vii, pl. 23; Alpheraky, 'Geese of Europe and Asia,' pl. 8.

As a winter-visitor to our shores the Pink-footed Goose has a rather remarkable distribution. It far exceeds the Bean-Goose in numbers on the east coast of England, being

plentiful in Northumberland, East Yorkshire, especially in the Humber district, and in parts of Norfolk. It is much scarcer on the southern and western sides, yet considerable numbers visited Lancashire in 1884 (Saunders).

The Pink-footed Goose was first distinguished from the Bean-Goose by M. Baillon, in 1833 (MacGillivray, Brit. Birds, vol. i, p. 149). It was described and named by Bartlett in 1838. Since that date this Goose has, from time to time, been identified in the London and Provincial markets. It occurs along the sea-board on both sides of Scotland, visiting the Hebrides, though it is rare in the Orkneys, and practically unknown in the Shetlands. It has been obtained on one occasion in Ireland, viz., in the co. Donegal about October 19th, 1891 ('Irish Naturalist,' 1892, p. 4, A. G. More).

In 1872 the late Sir Victor Brooke identified in the co. Meath, two Pink-footed Geese feeding in company with a large flock of Bernacles and Grey Lags. He states that "to an experienced eye the pink foot of this species is easily distinguished on the ground."

The Pink-footed Goose is not a bird with conspicuous markings and so may be easily overlooked. It often associates on the ground with Grey Lag-Geese and other species; indeed Sir R. Payne-Gallwey has shot it when keeping company with Bean and White-fronted Geese.

It is probable, however, that it keeps apart from the other 'Grey' Geese on migration, otherwise we should expect that the Pink-footed Goose would have a wider distribution over the British Isles. It has been stated that this bird does not associate with its congeners in captivity, yet in this state it is interesting to note that it has interbred with other species, and hybrids have been raised.

Flight.—The flight resembles that of the preceding species, from which it is difficult to distinguish this Goose on the wing.

Voice.—The voice resembles that of other 'Grey' Geese; Mr. Saunders considers that it is sharper in tone than that of the Bean-Goose.

Food.—The Pink-footed Goose is graminivorous to a great extent, and consumes large quantities of corn; it also eats grass and tender shoots.

Nest.—The nesting-sites of this species are not well known. The eggs, four to six in number, are pure white. Incubation usually takes place in June.

Geographical distribution.—The bird has been found breeding in Spitzbergen¹ and is said to breed in Iceland also. It probably nests in many other countries of Northern Europe. On migration, in the cold season, it has been recorded from Holland, Belgium and France, and it probably visits many other countries in Europe.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head and upper part of neck, ashy-brown; lower neck, chestnut; back and wings, greyish-brown, edged with yellowish-white; lower back, dark grey; wing-coverts, bluish-grey; breast and abdomen, light greyish-brown; primaries, bluish-grey; tail-feathers, grey, edged with white; upper and under tail-coverts, white.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Darker in colour than the adult and with less definite markings.

BEAK. Proportionately shorter and more slender than in other 'Grey' Geese. Basal part as far as the nostrils, black; tip or 'nail,' black; centre pink.

FEET. Pink; claws black.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	28	in.
WING	...	...	...	17·5	„
BEAK	...	...	...	1·75	„
TARSO-METATARSUS	...	...	...	2·5	„
EGG	...	...	...	3·12 × 2·25	in.

SNOW-GOOSE. *Chen hyperboreus* (Pallas).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. vi, pl. 413; Lilford, 'Coloured Figures,' vol. vii, pl. 24; Alpheraky, 'Geese of Europe and Asia,' pl. 1.

The Snow-Goose, as its name implies, is pure white except the tips of the wings, which are black; it therefore

¹ Here the nest has been found on a stony hill-side, overhung by a rock some seven hundred feet above the Fjord, with no water except the sea in the vicinity (Sir R. Payne-Gallwey).

differs markedly in plumage from the members of the Genera, *Anser* and *Bernicla*. Thus, from other Wild Geese it is readily distinguishable, but at a distance it might be mistaken for a tame white Domestic Goose. As a British bird the Snow-Goose is very rare; it has occurred chiefly along the coast during the autumn migration. In his 'Letters to Young Shooters' Sir R. Payne-Gallwey mentions that he saw, during the severe winter of 1890-1891, five Snow-Geese fly past him along the coast near Berwick-on-Tweed. The same writer also observed three others at Berkely in Yorkshire during successive winters, in company with a large 'gaggle' of White-fronted Geese, but none of them were obtained.

During the same winter, Snow-Geese were recorded from Cumberland and Northumberland.

In Ireland, the occurrence of the Snow-Goose was first made known by Mr. H. Saunders, who records three shot on the Wexford coast, two of which were procured (Proc. Zool. Soc., 1872, p. 59). This species has visited Ireland on a few other occasions. There are two interesting records from Belmullet, co. Mayo, concerning which Mr. Ussher writes: "In the *Zoologist*, 1878, p. 419, the Editor, Mr. Harting, records the appearance of seven Snow-Geese, which were seen on marshy ground in Termoncarra, near Belmullet, co. Mayo, about the end of October 1877; one was wounded and used as a decoy, by which a second was trapped. The latter proved to be a gander and was easily tamed; he then assumed the leadership of a flock of domestic geese, taking them long distances in the mornings and returning every evening to the yard where they were kept; he mated with one of them and goslings were reared; but after he had thus lived until April 1884, he was killed with a stone, when the owner, Mr. J. R. Crampton, presented the specimen to the Dublin Museum, where it is preserved. The bird that was wounded in 1877 died after six weeks, and was not preserved.

"In the end of September 1886 Mr. H. Blake Knox received another specimen from a son of one of his tenants living near Belmullet, who shot it as it flew past his house. Mr. Blake Knox has preserved this bird, and has kindly lent it to me; it is of larger size than Mr. Crampton's specimen in our Museum. It was exhibited by Dr. R. B. Sharpe at the meeting of the British Ornithologists' Club, on 22nd November 1899, and proves to be of the larger race, *Chen nivalis* (Forster)." ('Birds of Ireland,' p. 180.)

Quite recently a number of occurrences have been recorded from Ireland as follows:—

October 28th, 1903; a female bird in mature plumage shot in a stubble-field in co. Longford, and sent to Williams and Son for preservation; a second in immature plumage shot the same day in the same place; this specimen was not preserved.

November, 1903; a flock of eight Snow-Geese seen by Capt. Kirkwood and his daughter at Bartragh, co. Mayo.

December 1st, 1903; four seen by Mr. G. F. Knox at Foxford, co. Mayo (Williams, 'Zoologist,' 1903, p. 459, and R. Warren, *ibid.*, 1904, p. 32, also G. F. Knox, 'Irish Naturalist,' 1904, p. 76).

Flight.—The flight is strong and sustained.

Voice.—The voice is loud and harsh.

Food.—The Snow-Goose partakes of a rather mixed diet; in summer, green rushes and insects are eaten; in autumn, berries (Saunders).

Nest.—The nest is usually placed near water "in hollows formed in the sandy soil, and well lined with down; the eggs, usually five in number, are chalky-white" (Saunders).

Geographical distribution.—There are two forms of the Snow-Goose, both of which breed in the New World. The larger bird nests in Eastern North America, *i.e.*, in the Hudson Bay district. The Lesser Snow-Goose nests in Western North America, Alaska, and North-East Asia. In winter both forms migrate along the American coasts. The smaller bird is the variety which has been recorded from the Continents of Europe and Asia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Pure white, except the primaries, which are black. The forehead sometimes exhibits a rusty tinge.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—The greater portion of the plumage is shaded grey.

BEAK. Red, with a greyish-white tip.

FEET. Red.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	28	in.
WING	...	...	...	17	„
BEAK	...	...	...	2.1	„
TARSO-METATARSUS	...	...	...	3	„
EGG	...	..	...	3.4 × 2.2	in.

Allied Species and Representative Forms.—*C. cœrulescens* is a variety of Snow-Goose which exhibits dull bluish-grey shading over parts of the plumage. *C. rossii* is a very small form and *C. nivalis* is a large form of Snow-Goose.

RED-BREASTED GOOSE. *Bernicla ruficollis* (Pallas).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 6; Dresser, 'Birds of Europe,' vol. vi, pl. 416; Lilford, 'Coloured Figures,' vol. vii, pl. 25; Alpheraky, 'Geese of Europe and Asia,' pl. 15.

This, the least in size of the British Geese, is only a rare visitor to our shores, but, if once seen, it should attract attention by its richly coloured plumage.

Mr. Saunders gives seven instances of its occurrence in England, and three birds have been preserved. The data of captures are as follows:—One was obtained near London in the winter of 1776; it is preserved in the Museum of Newcastle-on-Tyne.

Another was killed near Berwick-on-Tweed, in 1818, and is preserved in the British Museum. The third specimen is in the possession of Mr. Marshall of Norton Manor, Taunton, having been sent from Maldon, in Essex, on January 6th, 1871. The remaining records are:—Two from Devon, one from Norfolk, one from Yorkshire.

It is very doubtful if the Red-breasted Goose has ever occurred in Ireland. Mr. Ussher excludes it from the Irish fauna in the 'Birds of Ireland,' so did the late Mr. A. G. More, in the last edition of his 'List of Irish Birds,' published in 1890.

Like most other species of Geese, the Red-breasted is gregarious and easily tamed.

Food.—Observations made of birds in captivity show that green vegetables form the chief diet, and water is frequently drunk.

Voice.—The note has been syllabled *shak-roy* (Pallas).

Flight.—The flight is strong and sustained.

Nest.—Mr. Popham describes the nest as being placed at the foot of cliffs and well supplied with down. The eggs are creamy-white in colour.

Geographical distribution.—The Red-breasted Goose breeds in Arctic regions of Europe and Asia, notably in Siberia. The late Mr. Seeborn and Mr. Popham found it nesting on the Yenesei: on migration in winter it visits the European Continent, especially the Eastern section, as also Asia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, throat, and back of neck, black, thinly bordered with white; large white patch in front of the eye; breast and fore-neck, rich chestnut-red; a patch of the same colour surrounded by a white margin covering the ear; back, wings, and tail, nearly black, some of the wing-coverts being edged with white; abdomen white, barred on the flanks with black.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Ear-patch less distinct than in the adult, being whitish with a chestnut centre; breast, pale reddish; rest of plumage, brownish, except the abdomen and tail-coverts, which resemble those of the adult.

BEAK. Very dark brown.

FEET. Very dark brown.

IRIDES. Hazel.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	22 in.
WING	...	...	...	14·5 „
BEAK	...	...	..	1 „
TARSO-METATARSUS	...	...	...	2 „
EGG	...	...	...	2·79 × 1·93.

BERNACLE-GOOSE. *Bernicla leucopsis* (Bechstein).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 7; Dresser, 'Birds of Europe,' vol. vi, pl. 415, fig. 1; Lilford, 'Coloured Figures,' vol. vii, pl. 26; Alpheraky, 'Geese of Europe and Asia,' pl. 20.

The Bernacle and its congener, the Brent, are essentially Sea-geese, and they resemble each other in many ways. Both display a large amount of black in the plumage, the Brent especially so. At a distance the Bernacle is distinguishable by the bold and well-defined patches of white and lavender-grey, which render it a remarkably bright and handsome bird.

This species is a visitor of restricted range to our shores in autumn and winter. Its distribution contrasts with that of the Pink-footed, and in a less degree with that of the Brent Goose; thus the Bernacle mostly frequents the west coasts of the British Isles, whereas the two former species are more often seen along the east coasts. Large numbers of Bernacles arrive at Solway Firth about the end of September; visiting at the same time the islands off the coasts of Donegal, Mayo and other parts of the west, north and north-east coasts of Ireland.

The Bernacle has been taken while migrating at Aranmore, where great numbers have been reported on passage. This island appears to be in the direct migration line from East Greenland, the principal breeding-resort of this Goose. To the Hebrides, Orkneys and Shetlands it is not an infrequent visitor.

I have sometimes seen solitary birds resting on the sea, close to the city of Dublin. They probably had flown from ornamental waters in the vicinity. This is all the more likely, as most of my observations were made in July, when the Geese, in a wild state, would have been breeding in the far north.

Imaginative persons, living in the more remote districts, still believe that Bernacle and Brent Geese—a distinction seldom being made between the two species—are hatched from Barnacles which hang on drift timber.

There is another familiar legend still in vogue, which endeavours to account for the birth of these Geese, namely, that certain trees overhanging the sea contained small round berry-like bodies on the ends of their branches:

according as they grew ripe these 'berries' dropped into the sea, and shortly afterwards re-appeared on the surface as fully developed Geese. It is hard to conceive that such gross superstition is possible, but one can understand that to fishermen living in isolated parts and unacquainted with bird migration, the sudden appearance of multitudes of these weird 'mourning-plumed' birds foraging among the seaweeds, must cause no small amount of surprise and conjecture as to their origin.¹

Flight.—The flight of the Bernacle is strong and rapid; the birds often form a V-shaped flock, which breaks up irregularly as they descend toward their feeding-grounds.

Voice.—The voice is low and murmuring and pleasing to the ear.

Food.—Bernacles delight to congregate on grass-covered islands, or on the brow of a lonely hill or elevated field overlooking the sea, where, free from molestation, they can readily pluck the grasses, clover and maritime herbs. They are shy birds, guarding their flocks by sentinels and keeping up a noisy cackle while feeding. They often fly down to the beach at low water, but unlike Brent Geese, do not require extensive mud-flats on which to procure their food, indeed many flocks resort to sea-pools surrounded by seaweed-covered rocks.

The Bernacle is not a bird of the market, and it is seldom seen in large numbers in the game-dealers' shops; nevertheless its flesh is much esteemed.

Nest.—Little is known of the nesting-habits of this Goose. It breeds, however, freely in captivity, usually making a nest of grass, slender stems and coarse herbage, and lining it with down.

The eggs, four in number,² are white with a smooth shell. The bird commences hatching about May.

Geographical distribution.—The Bernacle-Goose breeds probably in Greenland, Iceland and Spitzbergen, along the shore of the White Sea, and other Arctic regions, but its distribution in the nesting-season requires further investigation. Professor Collett mentions a pair that bred for several years on one of the Lofoten islands off the Nor-

¹ The name 'Bernacle,' without the word 'Goose' following, is often used to designate this bird, owing to the ancient fable of its origin.

² This is the number which I have most frequently seen laid in captivity.



F. H. Walker, Photo.]

BERNACLE GESE.
Zoological Gardens, Dublin.

wegian coast, but being an isolated instance, it affords us little help as to the general geographical distribution of this species in the breeding-season. In cold weather this bird migrates along the sea-board of North Western Europe, very few examples passing south of France.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, throat and neck, black, contrasting strongly with the white under-parts; front of head, cheeks and chin, white; black band running from the front of the eye to the base of the beak; back and wings, delicate ‘french’ or ‘lavender’ grey, barred with bluish-black and white; primaries and tail-feathers, black; upper and under tail-coverts, white; breast and abdomen, also white; flanks, barred with pale grey.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Cheeks, spotted black and white; back and wing-feathers, edged with rufous; flanks barred darker than in the adult.

BEAK. Black.

FEET. Black.

IRIDES. Very dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	27	in.	Female smaller.
WING	...	...	16	„	
BEAK	...	...	1·4	„	
TARSO-METATARSUS	...	...	2·3	„	
EGG	...	...	2·8	×	1·9 in.

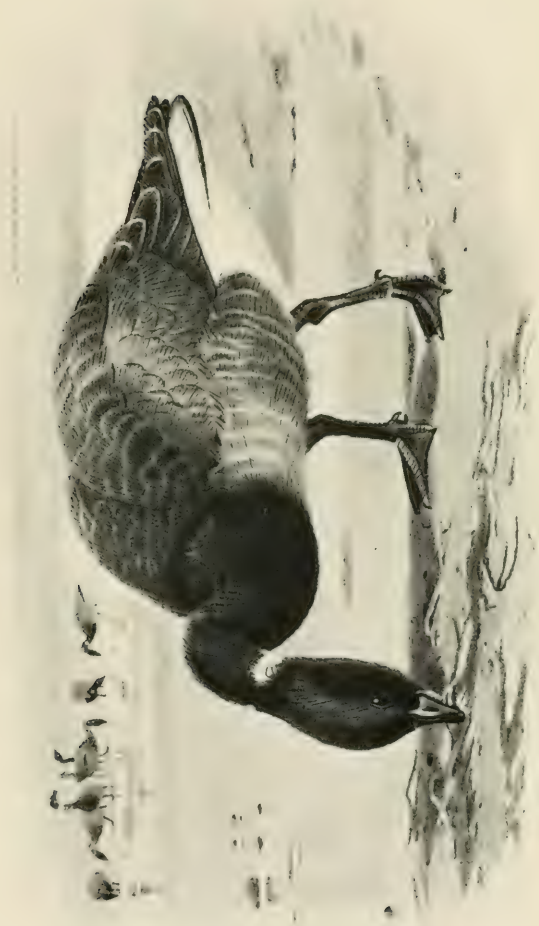
BRENT GOOSE. *Bernicla brenta* (Pallas).

Coloured Figures.—Gould, ‘Birds of Great Britain,’ vol. v, pl. 7; Dresser, ‘Birds of Europe,’ vol. vi, pl. 415, fig. 2; Lilford, ‘Coloured Figures,’ vol. vii, pl. 26; Alpheraky, ‘Geese of Europe and Asia,’ pl. 16.

The Brent Goose—often called the Sea Bernacle—is more exclusively marine in its habits than the last mentioned

species. With the exception of the Red-breasted Goose, which is only a rare wanderer to our shores, the Brent is the smallest member of its family and the one which is most abundant along our coasts: To the eastern and southern shores of England it is a plentiful visitor and thousands frequent various parts of the Irish coast. The Brent is very abundant in Tralee Bay, co. Kerry, where I have seen acres of slob-land tenanted by immense gatherings. On the west of Scotland, however, it is less numerous than the Bernacle. This Goose arrives about September, and its numbers increase until December. It remains until April, and I have seen small parties early in May on the Dublin coast. Stragglers in summer have been seldom recorded; a specimen was obtained on July 10th, 1887, at the Island of Rathlin O'Birne (Barrington).

I have watched great numbers of Brent Geese on the extensive mud-flats of Dublin Bay, within a few miles of the city. These birds are exceedingly clever and are quite able to discriminate between an ordinary pedestrian and a gunner approaching them on the open strand. I have seen these Geese alight within seventy yards of the main thoroughfare, crowded with noisy holiday seekers, nor did the din of the electric cars, the whiz of the passing cyclist, nor the suspicious-looking ornithologist, as he peeped over the wall and stood staring through his field-glasses, cause any anxiety among the flock. Shooting is here forbidden, and well the Geese know it. But let the gunner try to approach them—be it ever so stealthily—on the strand, and ere he get within two hundred yards of them off they fly. With the aid of my field-glass I have been able to view these birds so that they seemed to appear almost at my feet. On several occasions I have had the good fortune to arrive at their feeding-grounds before them, and have watched a flock fly in from the sea and pitch on the ooze. The birds almost immediately begin to feed, with the exception of perhaps one or two which may look about for a few minutes, and in this locality, where the birds are comparatively tame, I have not noticed any special sentinel Geese. They usually walk leisurely after one another, heading in the same direction, some, however, may be seen retracing their steps, some indulging in a chase, with wings spread and necks at full stretch, while others often halt to preen their feathers. As they feed they search among the seawrack, for *Zostera* and other marine weeds; they will



BRENT GEESSE.

also plunge their heads and necks under water to obtain food at the bottom of shallow sea-pools. On one occasion I witnessed a large 'gaggle' of Brent Geese break up into two parties; one continued to feed as above described, the other entered the shallow, tranquil water of the rising tide, on which they moved smoothly in the same direction as though gliding on the surface of a polished sheet of glass. Calmly—but not suspiciously—they viewed their surroundings, turning their heads and slender necks now to this side now to that, having nought to fear, and presenting a peaceful and fascinating appearance on a warm, calm, bright day in mid-winter. It is astonishing how unsuspicious these Geese are when compared with those harassed by the 'staunchion' shooter. The hunted Brent becomes gun-shy and extremely vigilant, guarding its numbers by outposted sentinels. Illustrative of the astuteness of this species when trying to baffle the efforts of the sportsman, Sir R. Payne-Gallwey writes: "A couple of winters ago I was lying in a deep channel at low tide. There was a large gaggle of several hundred Brent, feeding some distance off. One of them wandered from his companions a long way in search, I suppose, of daintier food. He suddenly popped his head over the bank within a dozen yards of where I lay motionless in my punt awaiting the rising tide that would bring me within shot. The Goose stared, I stared. "Brenta" would soon spring, I thought, and spoil my chance of a shot with my swivel gun. Not so! he merely stalked back to his friends, and on reaching them sprang up and led them off seaward."

Flight.—The flight of the Brent Goose is strong and swift. When flying the members of a flock frequently alter their relative positions. I have seen a flock travel through the air in a steady V-shaped pattern for some distance, and then change to an irregular linear figure, the birds in the rear overtaking those in advance. Finally, before descending, the flock often assumes a rounded and compact mass, which thins out as the birds approach the ground.

Voice.—The note may be syllabled *hōyănk-hŭnk-hŭnk*: it is rather loud and unmusical.

Food.—The Brent feeds among the ooze and patches of sand, laid bare by the receding tide. It seems very partial to *Zostera marina*, but other seaweeds are also eaten. It feeds by day, differing, in that respect, from the Bernacle.

Nest.—The nest is built of grass and other vegetable materials, and is thickly lined with down.

The eggs, four in number, are smooth and creamy-white in colour. Incubation begins about the middle of June.

The Brent is readily tamed, and thrives well in captivity.

Geographical distribution.—This Goose has a wide breeding-distribution in Arctic Europe and America, far beyond the limit of forest growth. It breeds on the Siberian Islands and Coasts, on the Islands in the Arctic Ocean as Kolguev, Novaya-Zemlya, Spitzbergen and Franz Josef Land. In winter it visits the sea-board of Europe, North Africa and Western Asia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, throat, neck, and upper breast, black; a small white patch on either side of the neck, which sometimes becomes confluent, forming either a complete ring or a ‘horse-shoe’ of white feathers; back and wings, brownish-black, with paler edges; primaries, rump and tail, black; upper and under tail-coverts, white; lower breast and abdomen, bluish-grey, with the edges of the feathers of a lighter shade.

Adult female nuptial.—Browner in colour than the male.

Adult winter, male and female.—Almost similar to the nuptial plumage, except that the feathers of back and wings are tinged with rusty-brown.

Immature, male and female.—The colours are much duller than in the adult and there is less white on the neck.

BEAK. Black, including the ‘nail.’

FEET. Black.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	23 in.
WING	...	...	...	13·5 „
BEAK	...	...	...	1·5 „
TARSO-METATARSUS	...	...	...	2 „
EGG	...	...	...	2·7 × 1·3 in.

Allied Species and Representative Forms.—*B. nigricans*, with a white collar and black lower breast, is the American representative.

Three other species of Geese have been obtained in the British Isles; namely, the CANADA GOOSE, the EGYPTIAN and the SPUR-WINGED GOOSE. These have been introduced into our country, and unpinioned birds inhabit ornamental waters. It is more than likely that specimens which have been shot, apparently as wild birds, may have escaped from confinement. Some Egyptian and Canada Geese have been obtained at seasons when migration is practically at a standstill, and it is a significant fact that the Canada Goose has been more often procured in England than in Ireland, though the latter country is nearer to America. Furthermore, the east side of Ireland has yielded more specimens than the west side.

The Egyptian and Spur-winged Geese are residential species in the tropical regions, and evidence goes to prove that they have not been obtained in a truly wild state latitudes north of the Mediterranean.

Inasmuch as these three species have not as yet claims sufficient to rank as British birds, it is not necessary to give more than a general account of their descriptive characters and measurements, so that if shot they may be identified.

CANADA GOOSE. *Bernicla canadensis*. (Linn.)

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult*.—Head, and upper part of neck, black; on the back of the cheeks a white patch extends to the chin and throat; lower neck, white; back and wings, brownish; primaries, rump, and tail, black; upper and under tail-coverts, white; breast and abdomen, light brown; flanks, paler.

BEAK. Black.

FEET. Dark greyish-black.

IRIDES. Dark hazel.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	40 in.
WING	...	...	...	18 ..
BEAK	...	...	...	2 ..
TARSO-METATARSUS	...	...	...	3 ..

EGYPTIAN GOOSE. *Chenalopex egyptiaca* (Linn).**DESCRIPTIVE CHARACTERS.**

PLUMAGE. *Adult.*—Cheeks, chin, and sides of neck, yellowish; head, back of neck, and back, brownish; secondaries, lustrous-green, tipped with black; primaries and lower back as far as tail, black; front of neck, breast, and upper abdomen, pale reddish; on the breast is a distinct and isolated brown patch; lower abdomen as far as the tail, pale brown.

BEAK. Pale brown, the base, 'nail,' and edges being darker.

FEET. Pink.

IRIDES. Yellow, surrounded by a patch of reddish-brown feathers.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	27	in.
WING	...	...	...	16	„
BEAK	...	...	...	1.75	„
TARSO-METATARSUS	...	...	...	3	„

SPUR-WINGED GOOSE. *Plectropterus gambensis* (Linn).**DESCRIPTIVE CHARACTERS.**

PLUMAGE. *Adult.*—Upper part of head and neck, dull brown; cheeks and throat, white, spotted with brown; sides of breast, lower neck and back, black; scapulars and inner secondaries exhibit a brilliant lustrous-green; wings edged with white; breast and abdomen, white.

BEAK. Reddish-yellow, with a 'protuberance' at the base.

FEET. Reddish-orange.

IRIDES. Light brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	38	in.
WING	...	...	...	18	„
BEAK	...	...	...	3	„
TARSO-METATARSUS	...	...	...	3	„

Note.—At the fold of the wing (carpal joint) there is a strong white horny spur developed which points upwards and inwards. It measures '62 in. in length.

WHOOPER SWAN. *Cygnus musicus* (Bechstein).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 9; Dresser, 'Birds of Europe,' vol. vi, pl. 419, fig. 4; Lilford, 'Coloured Figures,' vol. vii, pl. 29; Booth, 'Rough Notes,' vol. iii, pl. 2.

The Whooper is the larger of the two Wild Swans which visit our country. With the onset of severe wintry weather in Northern Europe, numbers migrate southward. The coast and islands of Scotland are generally visited during the middle of November, and, with continued stress of weather, Whoopers make their appearance in many other parts of the British Isles. It seems rather a moot point as to whether this, or Bewick's Swan, is the more plentiful bird in England. With reference to the distribution of the two species, Sir R. Payne-Gallwey draws attention to the fact that Whoopers are known to wander to inland lakes, often preserved, and accessible to the shoulder-gun, and so this species has been misjudged a more numerous bird than Bewick's Swan, which, frequenting the sea-coast, is less easily approached by the fowler. In Sir R. Payne-Gallwey's experience, the Whooper is on the whole the rarer. It more frequently occurs in Scotland than elsewhere in the British Isles. To Ireland it is a rather rare and uncertain visitor, which fact is borne out by the late Mr. F. Williams's statement, namely, that the Whooper occurs in the proportion of one to twenty-five of Bewick's Swan. The former pays us but a short visit. Its arrival, as before stated, depends largely on the severity of the weather, but the majority of the birds do not appear until December, and often take their departure in February or March, though stragglers may linger until May.

Of the numbers of Wild Swans that frequent our shores few are molested. Apart from sentimental reasons, the birds are hardly worth the expense of powder and shot. Their flesh is coarse and, unless they are young, it is tough and

stringy. Many a fowler lets an opportunity pass of 'bagging' with one discharge from his heavy staunchion gun, half a dozen or more of these great birds: it is sentiment and perhaps superstition on the part of the gunner that often saves a Wild Swan's life. In the West of Ireland this is particularly noticeable. The late Mr. Watters, in his charming little book on 'Birds of Ireland,' gives the following romantic account: "On the authority of Mr. R. Glennon, towards spring the small lakes in the county of Mayo are tenanted by flocks of these birds congregated there preparatory to their return to those regions of snow to which their plumage accords, and approximates so chastely in appearance. And, strange to say, although they occur in considerable numbers at that time, they are never interfered with or molested by the peasants of the neighbourhood, on account of a tradition that the souls of virgins (?) who, whilst living, had been remarkable for the purity of their lives, were after death enshrined in the form of these birds, as emblematic of their purity and beatitude; for this reason they remain in safety, as it is also believed that whoever would be so unlucky as to meddle with them would pay for his temerity by the forfeit of his life, ere the year had elapsed."

From remote ages the Swan has been loved and admired by mankind, as is well illustrated by the numerous poetical descriptions of its beautiful unsullied plumage, gentle form, and graceful flight:—

"So the white swans from the firmament swoop,
With their gong-throated queen—a beautiful troop—
Wheeling gracefully earthward, and floating as though
The young winds were wooing fair cloudlets of snow."

Flight.—The flight of this great bird, when once fairly under way, is rapid and strong, but owing to its heavy weight, the Whooper rises in a rather clumsy manner. The flapping of the wings of a flock rising off the surface of the water, may be likened to the cracking of a whip rapidly repeated. The swishing sound of the wings can be heard after the birds have ascended to a considerable height.

Voice.—This Swan derives its name from the sound of its voice, which, when heard at a distance, resembles a rather full-toned whistle. It is not a vibrating sound; it is a clear prolonged *whoo-whoo*, followed by a pause and

then repeated. I have heard Wild Swans (presumably Whoopers), whistling on a migration-night overhead, along the Dublin coast. During the snowy weather of February, 1900, Mr. F. H. Walker of Dublin drew my attention at dusk, to a loud whistling cry syllabled as already described. We heard the voices sounding from a great height in the air over Clontarf estuary, near Dublin. It was an intensely cold evening and the biting north wind was blowing half a gale. Now and again the whistling seemed as though produced close to us, the storm wafting it to our ears. The cry was not unmusical though rather clanging in character. We were of the opinion that a flock of Whooper Swans was passing by.

Food.—The Whooper feeds largely on aquatic vegetables, including roots and seeds: it also eats insects, water-snails, and other shell-fish.

Nest.—The nest, which is very large, is usually placed on the ground, often on an island in a lake; it is composed of coarse grasses and other materials.

The eggs, four to seven in number, are of a cream-colour with rough shells. Incubation begins about the last week in May.

Geographical distribution.—The Whooper Swan breeds in many parts of Arctic Europe and Asia, including Iceland, Finland, Lapland, Norway, Sweden, Northern Russia and Siberia. A little over a hundred years ago it nested in the Orkneys. On migration, it reaches the waters of Europe, North Africa and Asia, as far east as Japan and China.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Completely white; the head sometimes exhibiting a faintly yellowish tinge.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Head, neck, back and wings, brownish; breast and greater part of abdomen, pale brown; lower abdomen, white.

BEAK. Basal part deep yellow, this colour extending in front of the nostrils; rest of beak, black.

FEET. Blackish.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	60	in.
WING	...	...	...	25	„
BEAK	...	...	...	4.2	„
TARSO-METATARSUS	...	...	...	4.25	„
EGG	...	...	...	4.5 × 2.9	in.

BEWICK'S SWAN. *Cygnus bewicki* (Yarrell).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 10; Dresser, 'Birds of Europe,' vol. vi, pl. 419, fig. 3; Lilford, 'Coloured Figures,' vol. vii, pl. 30.

The late Mr. Yarrell first identified this bird as a distinct species; for a long time it had been confounded with the Whooper.

In a state of nature, the two species of Wild Swans do not intermix, so that a chance of comparing their relative sizes is thereby not afforded. When placed side by side, there is no difficulty in distinguishing the one from the other, for the Whooper is one-third the larger, and the distribution of the yellow patch at the end of its beak differs considerably.

Bewick's Swan is a visitant to our shores during the winter months only, the numbers which migrate increasing with the severity of the weather. Like the Whooper, it remains with us but a few months, arriving during December and departing towards the end of February.

Bewick's Swan is not uncommon along parts of the Welsh and English coasts; in Scotland and Ireland it is much more abundant.

As a general rule, the number in a flock of these birds greatly exceeds that in a flock of Whooper Swans.

This Swan differs but little from the Whooper in its habits. It is fonder of tidal waters and the open sea than the latter.

Flight.—The flight is swift, buoyant, and strong, when once the bird is fairly on the wing; the rapid beat of the pinions produces a highly-pitched whistling sound, audible at a considerable distance.

Voice.—The voice of Bewick's Swan has not the same

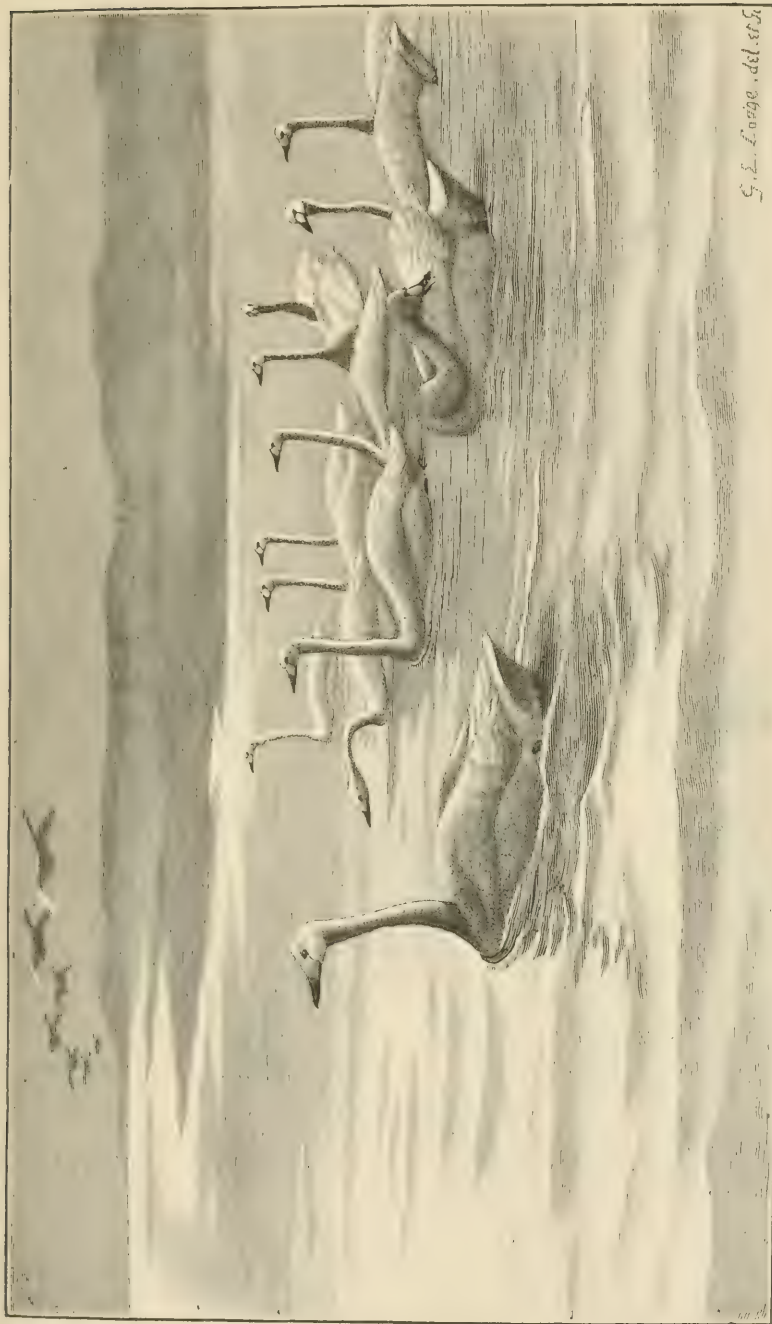


FIG. 13.—BEWICK'S SWAN.

musical sound as that of the Whooper; it is a rather loud, sonorous or barking noise, syllabled *tong-tong-bong-hong-ong-ongong*.

Food.—The food consists chiefly of water-plants.

Nest.—The situation and materials of the nest resemble those of the preceding bird, but the structure is smaller. In his book 'Icebound on Kolguev,' p. 43, Mr. Trevor-Battye describes the nest as a structure raised two and a half feet above the ground like a mound. It is perfectly smooth on the outside and tapers to the top, which is circular and about two feet in diameter. Mr. Battye found it to be composed of bunches of moss, lichen and dry grass. It was lined with dead grass and a little down and contained three eggs, smaller and whiter than those of the Whooper.

The eggs are of a pale cream colour. Incubation begins about May.

Geographical distribution.—Bewick's Swan breeds in Arctic Europe and Asia, including many of the islands of the Arctic Sea; its distribution does not extend as far west as that of the Whooper. The eggs have been taken by Mr. Harvie-Brown and the late Mr. Seeböhm on the Petchora, and by Mr. Trevor-Battye on the island of Kolguev; this Swan breeds also on the Yenesei and in Novaya-Zemlya. On migration in winter it is found over the European and Asiatic Continents as far east as Japan.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Pure white.

Adult female nuptial.—Similar to the male in plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Brownish.

BEAK. Base, orange, this colour terminating behind the nostrils; rest of beak, black.

FEET. Black.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	50	in.
WING	...	...	...	21	„
BEAK	...	..	...	3.5	„
TARSO-METATARSUS	...	...	...	4.75	„
EGG	...	...	...	3.9 × 2.6	in.

MUTE SWAN. *Cygnus olor* (J. F. Gmelin).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 8; Dresser, 'Birds of Europe,' vol. vi, pl. 418; Lilford, 'Coloured Figures,' vol. vii, pl. 28.

As we watch this magnificent and stately bird gliding leisurely through the waters of our parks and rivers, now and again drawing up to the brink to accept the proffered cake or biscuit from the hand of even the most timid child, no creature could appear more thoroughly domesticated and accustomed to the society of man. Yet the Mute Swan maintains itself on unprotected lakes, and breeds in a semi-feral state in many parts of the British Isles. According to Mr. Saunders, it is said to have been introduced into England in the time of Richard I., having originally come from Cyprus. It is generally distributed in England and Scotland, breeding, during recent years, in the Outer Hebrides, where the birds fly as if wild.

With reference to its occurrence in Ireland, Mr. Ussher states that it "has increased to considerable flocks in favourable localities."

When boating in Dublin Bay, I have met the Mute Swan resting on the open sea; I have seen solitary individuals flying across the city of Dublin, some fifty yards above the highest buildings, and judging from their heavy form, I am of the opinion that they were Mute Swans. I have seen them in midsummer as well as in winter, which tends to prove that they were not migrating, but were simply unpinioned birds from ornamental waters, locally changing their quarters.

In the 'Birds of Ireland,' Mr. Ussher states that "when the resorts of these birds become crowded, small parties go forth on the wing, not only to other lakes and rivers, but in many places to the coast; thus Mr. Warren has seen seven adults in Killala Bay, and Mr. Sheridan has met with others in Achill, while six were approached and one shot on Dundalk Bay a mile from land." During hard winters the numbers of Mute Swans are increased by migrants arriving from Denmark, Sweden, and other countries of Europe. These visitors—which may or may not remain to breed in the British Isles—are distinctly wild birds. It has been stated that a blow from a Swan's wing is of sufficient strength to break a man's leg. This can hardly be true, judging from the size of the wing

bones and muscles, nor do I know of a single instance of fracture resulting from such violence. I have known a furious old male Swan to knock a small boy head over heels into the water just as he retreated across a little narrow bridge connecting an island in an artificial lake with the lawn. The intruder thought to steal an egg from the Swans' nest during their absence, and to return to the land in safety, but in vain, for the male was awaiting the return of the plunderer across the bridge, while the female was fast approaching on the water. With the assistance of two men and a rope the boy was quickly landed, and, although repeatedly struck on the arms and legs, he did not sustain a fracture.

Flight.—The flight resembles that of the two preceding species but is less buoyant.

Voice.—The term 'mute' is hardly a correct one to apply to this species. In the pairing-season it often utters a loud trumpeting note, moreover it hisses like a snake if disturbed while incubating.

Food.—The food consists of various kinds of water-plants; insects and grain are also eaten.

Nest.—The nest is a bulky structure, made up of various kinds of coarse herbage; it is usually built on islands of inland waters. The eggs are greenish-white in colour. The shell is of rough texture, and the clutch ranges from three to ten. Incubation begins in May.

Mr. Ussher states that he has "seen an incompleated clutch of five eggs nicely covered with down and rubbish when the birds were off them." The cygnets (young swans) are very carefully tended by their parents. The Mute Swan pairs for life.

Geographical distribution.—In a thoroughly wild state this species has a wide distribution as a breeding-bird in Europe. It nests in Denmark, in South Sweden, Central and Southern Russia, extending southward to the lakes of Greece, the Black and Caspian Seas. In winter it migrates to the waters of North Africa and Central Asia as well as to Europe. In addition to the British Isles it breeds in many parts of Germany in a semi-domesticated condition.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Pure white.

Adult female nuptial.—Similar to the male in plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female (cygnet).—Greyish-brown, the breast and abdomen being of a lighter shade.

BEAK. Deep orange colour, except the 'nail,' the nostrils, and the 'basal protuberance,' which are black. There is also a noticeable patch of black, extending from the front of the eye to the base of the beak.

FEET. Black.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	58	in.	Female smaller.
WING	...	27	„	
BEAK	...	4.25	„	
TARSO-METATARSUS	...	4.5	„	
EGG	...	4	× 2.9 in.	

Note.—The Mute Swan is the only one of the three species mentioned, which carries its neck with a graceful sigmoid curve, its wing-plumes at the same time being raised and arranged loosely over the back. The whole carriage of the bird is one of pride and dignity.

The Whooper and Bewick's Swans, on the other hand, assume a stiffer gait; they move on the water like Geese, with necks straight and backs flattened.

In the Mute Swan there is no cavity in the upper part of the breast-bone (sternum) to receive a coil of the wind-pipe (trachea). In the adult Whooper the loop of wind-pipe takes a vertical course, in Bewick's, a horizontal course, as it lies in the sternal cavity.

The so-called 'Polish' Swans are now looked on as white varieties of the cygnet of the Mute Swans ('Zoologist,' 1887, p. 463, 1888, p. 470, also Cat. B. Brit. Mus., xxvii, p. 38) (Saunders).

COMMON SHELD-DUCK. *Tadorna cornuta* (S. G. Gmelin).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 11; Dresser, 'Birds of Europe,' vol. vi, pl. 420; Lilford, 'Coloured Figures,' vol. vii, pl. 32.

The Sheld-Duck, in full nuptial plumage, is one of the most handsome of our common Ducks. Its favourite resorts are large tracts of mud-slob, ooze, or sand.

During high tide, when the feeding-grounds are covered, small parties of this Duck may be seen on our tidal estuaries, in company with Wigeon and other species, but large gatherings are uncommon.

On a hot sunny day in the month of September, I have watched through a telescope several Sheld-Ducks, immature and adult, standing on the sand, with their beaks resting on their backs, the birds being apparently asleep. Even then, they are on the alert, and can rarely be approached within the range of gun-shot. Once, however, I managed to get within twenty yards of a flock of fifteen birds. They were at the edge of a grass-plot on the beach of Dublin Bay, and were feeding on sand-hoppers, here plentiful. Going on 'all fours' through the short grass—the only available cover—I succeeded in stalking them and securing several specimens.

The Sheld-Duck is indeed a wary bird. The cautious way in which a flock will quietly walk away from a gunner who attempts to come within two hundred yards on the open strand, and the slow, regular, and measured flight, are habits more characteristic of Wild Geese than of Ducks.

To the unaided eye, Sheld-Ducks, even at a short distance, appear simply as black and white birds, and are often mistaken by the inexperienced observer for Oyster-catchers. It is only when seen close at hand, or through a powerful field-glass, that the rich chestnut marking can be discerned. The Sheld-Duck very seldom even attempts to dive, except in the case of the young, when trying to escape capture. I have also seen Sheld-Ducks, wounded by gunshot, making frantic efforts to escape by repeatedly diving, while at the sight of the Peregrine Falcon overhead these birds will submerge themselves under water.

This species is a tolerably plentiful British bird: I have seen it in Dublin Bay every month in the year. It seldom leaves the sea-coast. The flocks which occur in the autumn and winter scatter in the spring, and the birds



COMMON SHIELD-DUCK.

commence to pair in April, or sometimes earlier. Specimens which have been obtained inland have generally flown from ornamental waters, which abound with this elegant and easily domesticated Duck.

This Duck receives its name from the word 'sheld,' signifying parti-coloured or pied. It is popularly supposed to derive its name from the following characteristics:—(a) It feeds on shell-fish, (b) the knob at the base of the beak turns pink in the breeding-time and resembles a shell, (c) the bird has a chestnut cravat or 'shield' (hence 'sheld') around its neck and breast.

Food.—The food consists of small crabs, various marine molluscs, and worms; in addition to which, I have found seaweeds in the stomach. I have fed tame Sheld-Ducks on bread, biscuits, grain, small frogs and minnows.

The flesh as an article of food is worthless. It is dark in colour, and has a rank, disagreeable, fishy flavour. I have tasted both adult and immature birds, cooked and seasoned in all kinds of ways, but never found them eatable.

Voice.—The voice in the male is rather whistling in character, being pitched much higher than that of the female. The latter sex, much more noisy, utters a kind of bark or cackle.

Flight.—The flight is steady and well sustained, and the stroke of the pinion is slower than that of other Ducks, in this respect more closely resembling the flight of the Goose.

Nest.—For their nesting-sites the greater number of Sheld-Duck select rabbit-holes excavated in sand-dunes on the coast; some, however, scrape burrows, circular in outline, for themselves. The nest is often twelve feet from the entrance. A few birds resort to the vicinity of fresh-water lakes; Mr. Ussher records an instance in which this species bred on Lough Neagh. The Puffin, though the most usual, is not the only assailant which at times evicts the rightful owner from its home, as is seen from the following lines, quoted from 'The Fowling in Ireland,' p. 64, by Sir R. Payne-Gallwey: "I once saw an amusing tugging match between a female Shelduck and a young rabbit that had invaded the hole which she had selected for her eggs, the intruder at last being hauled out by the ear and sent adrift." The Sheld-Duck takes the utmost care not to betray its presence when near its burrow, round which

its footprints can seldom be found. It is not supposed to leave its nest until early morning or at twilight. I have known of a sitting bird which was dug out and captured on the nest. The eggs have also been discovered in holes on precipices, and rarely, in furze-coverts. Grasses, leaves, and fragments of dry seaweeds, with a warm lining of down, are the building materials used.

The eggs, seven to twelve in number, are cream-coloured. Incubation usually begins in May. The parent-birds watch over their brood most carefully; the nestlings are conveyed in safety to the sea by scrambling on to their mother's back.

Geographical distribution.—The Sheld-Duck has a wide breeding-distribution round the British coast. North of Britain it breeds in Norway, Sweden, Denmark, and Holland. South of our Isles it reaches the shores of France and Spain, and extends eastward to the Black and Caspian Seas. It is also found on some of the salt lakes of Asia, as far east as Japan, while its winter range extends to the Tropic of Cancer (Saunders). It is at once seen that the Sheld-Duck is less arctic in its breeding-range than are most of the Wild Geese and Swans.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head and upper neck, dark glossy-green, below which is a white collar, while at the root of the neck is a broad chestnut band extending across the upper part of the back and breast; rest of back, white; breast and abdomen, white, interrupted by a broad dark brown median line; scapulars and primaries, nearly black; alar speculum,¹ green, bounded behind by a line of chestnut; tail, white, tipped with black; wing-coverts, white.

Adult female nuptial.—Similar in colour to the male but duller in pattern.²

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Head and neck, dark mouse-colour, the feathers being finely edged with dull

¹ The alar speculum is the bright lustrous patch on the secondaries.

² Like the Geese the sexes of the Sheld-Duck are almost similar in plumage, and the male does not assume an 'eclipse' dress.

buff; patch in front and below the eye, throat, breast and abdomen, white; top of back and scapulars, brownish; wing-coverts, chiefly white, with a little green on the speculum; primaries, blackish; upper surface of tail-feathers, chiefly brownish, except the outer ones, which are pure white.

BEAK. Rich red; knob at the base same colour; this knob is absent in the female.

FEET. Warm flesh-colour.

IRIDES. Brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	25	in.
WING	...	...	...	13	"
BEAK	...	...	...	2.5	"
TARSO-METATARSUS	...	...	...	2.2	"
EGG	...	...	...	2.75	× 1.9 in.

RUDDY SHELD-DUCK. *Tadorna casarca* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 12; Dresser, 'Birds of Europe,' vol. vi, pl. 421; Lilford, 'Coloured Figures,' vol. vii, pl. 31.

A remarkable immigration of Ruddy Sheld-Ducks to the British Isles, comparable to the spasmodic visits or 'irruptions' of Pallas's Sand-grouse, took place in 1892.¹ Previous to that date, this Duck had been seldom obtained, most of the so-called British-taken specimens being escaped captives from aquatic preserves. The first recorded bird killed in our Isles came from Blandford, in Dorset, in 1776. It is preserved in the Newcastle Museum (Saunders). The Ruddy Sheld-Duck, being a south-eastern species, rarely reaches our shores on migration; according to Mr. Saunders "it is almost unknown to the north of the Alps and Carpathians." Not exclusively marine in its habits, it often

¹ The reader is referred to a most interesting account of the migration of numbers of Ruddy Sheld-Ducks to the British Isles, written by Mr. Ogilvie, and published in the 'Zoologist' for 1892. Mr. Ussher, in the 'Birds of Ireland,' gives a detailed list of the immigration to that country in 1892.

resorts to fresh waters, collecting into large flocks in winter in those countries where it is common.

Flight.—The flight resembles that of the last species.

Food.—In its habits of feeding it resembles the Goose even more than the preceding species. It may be observed in our city parks and Zoological Gardens ‘grazing’ on the lawns and grass edgings which skirt the ornamental waters. It is a favourite and showy water-fowl, readily tamed, and hybrids between this species and the Egyptian Goose have frequently been raised.

Voice.—The note is loud, and resembles a repeated bark; it may be syllabled *kape-kape-kape*. I have heard this bird also utter a rather melancholy *ă-ōng, ă-ōng*.

Nest.—Like its congener, the Ruddy Sheld-Duck breeds in burrows, also in the dark crevices of high rocks, and in the hollow trunks of trees. The nest is built of dry grass and other vegetable matter and thickly lined with down. The eggs are creamy-white in colour. The clutch ranges from nine to sixteen.

Geographical distribution.—The breeding-range of the Ruddy Sheld-Duck extends over South-Eastern Europe and Asia, and as far east as China and Japan. It breeds also in North Africa. In winter, its migrations extend to India, and as a wanderer it has been observed in many of the northern countries of Europe, including Iceland.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head and throat, pale buff; neck, back, scapulars, breast and abdomen, ruddy-brown; black ring round the neck; wing-coverts, very light buff, the alar speculum being of a lustrous bronze-green colour; primaries, dark greyish-brown; tail and rump, greyish-black.

Adult female nuptial.—The black ring is absent, while the front of the head is lighter in colour than in the male.

Adult winter, male and female.—The black neck-ring is absent.

Immature, male and female.—Resembles the female, but is duller in shade.

BEAK. Lead colour.

FEET. Blackish.

IRIDES. Yellowish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH ...	..	25	in.	Female smaller.
WING ... ..	...	14·5	„	
BEAK ... ..	...	1·75	„	
TARSO-METATARSUS	...	2·25	„	
EGG ... ..	...	2·6 × 1·8	in.	

Allied Species and Representative Forms.—The South African representative is *T. cana*, with a grey head. Australia and New Zealand possess other forms (Saunders).

MALLARD. *Anas boscas* (Linnæus).

Coloured Figures.—Gould, ‘Birds of Great Britain,’ vol. v, pl. 15; Dresser, ‘Birds of Europe,’ vol. vi, pl. 422; Lilford, ‘Coloured Figures,’ vol. vii, pl. 33.

The Mallard or Wild Duck is familiar to every sportsman and naturalist. It is resident to a large extent in the British Isles; nevertheless its numbers are greatly augmented by the arrival of migrants which come from more northern latitudes. The Mallard frequents marsh, river, lake and sea-coast. During autumn and winter large numbers appear on our tidal estuaries, where, in company with Wigeon and other species, hundreds may be seen drifting on the tideway. During severe frost, Mr. R. Warren has found Mallards as numerous as Wigeon on the sands of the Moy estuary, co. Mayo. It is not at all times easy to identify a ‘Wild Duck’ (especially a female or an immature bird) resting on the open sea. The plumage, when viewed at a distance, often appears darker than it really is, especially on a gloomy winter’s day, when I have seen the birds of a flock look almost as black as Scoters. It would appear that the Mallards which are seen round our coasts in winter are migrants¹; several examples of these I have examined in the flesh, and have found them smaller and lighter in weight than home-bred birds taken from inland districts.

¹ I have examined specimens shot at sea in early autumn in very poor condition, probably newly-arrived visitors which had been suffering from migratory fatigue.

Food.—The Mallard is essentially a night-feeder, 'flighting,' as the gunner terms it, at dusk to its feeding-grounds. Those birds which frequent the tidal waters by day part company at night with Wigeon and other sea-ducks, which remain to feed on the coast. Potato-fields, stubble, bogs, ditches, the shores of fresh-water lakes, are all frequented by the Mallard, and the corn-fields are greedily attacked in the harvest season.

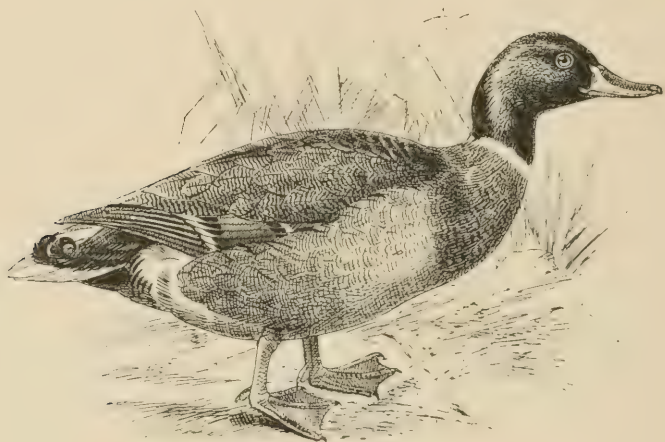


FIG. 14.—MALLARD.

Flight.—The Mallard is strong and swift on the wing; when flying inland to its feeding-grounds, it travels at a rapid rate generally at no great height from the ground. The clear highly-pitched whistle produced by the vibrations of the pinions, is a pleasing sound well known to sportsmen. In autumn the Mallard undergoes a heavy moult¹, shedding its quills almost simultaneously; it is then scarcely capable of flight, and remains on secluded rivers or on small lakes,

¹ On August 28th, 1901, in the co. Clare, in company with the Rev. S. W. King, we suddenly disturbed a Mallard out of a tuft of rushes on a turf bog. With great difficulty the Duck kept on the wing for some twenty yards. We marked it down, and after a short chase, succeeded in capturing it. We found it moulting so freely that several of the wing and tail-feathers came out while holding the bird gently in our hands.

or it may lurk about in turf-drains or in ditches; in the last-named situation I have seen it feeding by day.

Voice.—At the onset of the pairing-season,² in early spring, the males become noisy, and their loud call-note *quāck-quāck quā-quā*, may be heard on our tidal estuaries above the merry whistle of the Wigeon, as they sport on the water, the rival males actively endeavouring to gain possession of the females. The alarm-note is harsher and more prolonged than the call-note.

Nest.—The Mallard builds on the ground, along the margins of inland lakes and rivers, amid the grass and scrub of the drier and firmer soil of bog-land, in dry ditches, among heather on the hills,³ and more rarely in trees, in ruins, and on the tops of walls. Most of the nests which I have observed in unprotected situations have been built among vegetation sufficiently dense and tall to conceal the sitting bird, but in preserves the nests are often in very exposed situations. The principal materials of which the nest is composed are dry grasses, with a lining of down. The eggs, eight to twelve in number, are very pale greenish-blue, which changes to greenish-yellow as incubation advances. Incubation begins about the end of March in the southern counties, but later further north. The Mallard still breeds freely in the British Isles, despite increased drainage, nor is it likely to fall off in numbers as long as it continues to receive adequate protection.

Geographical distribution.—Abroad, this bird has an extensive distribution as a nesting-species over the Continent and Islands of Europe, from the Sub-arctic regions to the

Having made up our minds that the bird showed all signs of maturity, and having noted the sex, we gave it its liberty. It fluttered to the nearest furze-bush, under which it took refuge. On different occasions I have seen a Mallard fly so clumsily that a dog could easily hunt it down. These 'moulting Mallards' (adult females or males changing from eclipse to winter plumage) are frequently mistaken for 'flappers' by sportsmen.

² It is interesting to note that the Mallard in a state of nature is monogamous, whereas its descendant, the farm-yard Duck, is distinctly polygamous.

³ An interesting habit, as recorded by Mr. Ussher, is that of the parent bird leading its little downy ducklings from the hills to the Cappagh lakes, co. Waterford. The distance, which is sometimes about one mile, is undertaken on foot. In the stillness of the night Sir R. Payne-Gallwey once came across a Wild Duck "and her tiny straggling brood," marching through a village street ('Fowler in Ireland,' p. 33).

Southern countries, likewise in Asia, as far south as Kashmir, and eastward to Japan and China. It also breeds in North Africa. On its winter migration it reaches to India and Burnah. Our bird is also found in Temperate and Central America.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head and neck, dark glossy green, below which is a white-neck-band; hind neck, upper part of back and breast, rich reddish-brown; lower part of back, dark bluish-black; wing-coverts, brownish; alar speculum, bluish-purple, edged above and below with white; primaries, brownish; breast, abdomen and scapulars, light grey, finely speckled with black spots; tail greyish-brown; upper tail-coverts, glossy black, the four central feathers being curled up; under tail-coverts, also black.

Adult male, post-nuptial or eclipse.—About the end of May the male assumes a brown plumage, resembling that of the female; but the feathers of the top of the head and lower back are darker; this garb is retained until September or October.

Adult female nuptial.—Top of head, dark brown; rest of plumage chequered brown and buff; alar speculum, dark glossy-green.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female plumage.

BEAK. Yellowish-green.

FEET. Orange-red.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	23	in.
WING	...	...	...	11	„
BEAK	...	...	...	2.25	„
TARSO-METATARSUS	...	...	...	1.75	„
EGG	...	...	...	2.25	× 1.6 in.

Allied Species and Representative Forms.—*Anas obscura* inhabits the North-east of America, both sexes resembling in plumage our female bird (Saunders).

GADWALL. *Anas strepera* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 19; Dresser, 'Birds of Europe,' vol. vi, pl. 424; Lilford, 'Coloured Figures,' vol. vii, pl. 34; Booth, 'Rough Notes,' vol. iii, pls. 5 and 6.

The Gadwall is only an irregular visitor to our country, and is by no means common.

The female somewhat resembles in size and colour the Mallard of the same sex, and thus may be easily overlooked, though the white patch on the wing distinguishes the species.

The Gadwall is more often seen on fresh than on salt water, still, it is significant to note that it has been recorded more frequently from or near maritime counties than from inland districts, especially in Ireland (Ussher). On the Moy estuary it has been seen feeding with Wigeon (Warren). It also visits the coasts of Scotland, including the Hebrides and Orkneys. It is rather solitary and very shy, and delights in the quietude and shelter of small lakes and pools, fringed with such aquatic herbage as weeds and rushes.

Food.—Its food, taken chiefly at night, consists of green vegetables, seeds and grain. In the gizzard of an adult male specimen sent me from co. Clare by Rev. S. W. King, I found quantities of minute reddish-brown seeds mixed with coarse sand and grit. In the gizzard of another adult male sent me from co. Waterford by Mr. Ussher, I found shreds of fine grasses and an abundance of glistening sand.

Flight.—On the wing this Duck strongly resembles the Mallard, but the flight of the former is even swifter and more buoyant.

Voice.—The voice is a low cackling sound, and may be syllabled *quack-quack, quack-quack*, in rapid succession.

Nest.—The Gadwall breeds on the ground, generally in the vicinity of fresh water. The nest, lined with down, is built of grasses and other vegetation. The eggs are shaded from light buff-colour to almost creamy-white. The clutch numbers from eight to thirteen.

This bird now breeds in fair numbers in Norfolk. About half a century ago some pinioned birds were turned down on the lake at Narford Hall, and it is their descendants, together with such wild migrants as they have induced to remain during spring and summer, which represent the breeding-stock. In Norfolk this species is increasing, and under adequate protection it will probably extend its breeding-range to other adjacent counties.

Geographical distribution.—Abroad, the Gadwall breeds sparingly in Northern, but commonly in Central and South-eastern Europe, also in Asia and North America to the Sub-arctic regions. Its winter range extends to North Africa, North India, Central America and the West Indies.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head and upper neck, light greyish-brown, finely speckled with brownish-black; feathers of back and scapulars, dark brownish, edged with a crescent of light grey; wing-coverts, chestnut, shading to black, behind which are blackish-brown feathers, followed by a white speculum; primaries, brownish; inner secondaries, brownish, edged with yellowish-brown; these feathers are long and pointed; tail, dark brown, each feather margined with a lighter shade; upper and under tail-coverts, bluish-black; lower neck and upper breast, dark grey, each feather being edged with a light grey crescent; lower breast and abdomen, white; sides, finely pencilled with shades of grey and white.

Adult male, post-nuptial or eclipse.—This plumage is somewhat similar to that of the female, but the wing colours are retained.

Adult female nuptial.—Head and upper neck, speckled with dark brown on a lighter ground shade; the crescentic markings of the back, neck and breast are light brown on a darker ground colour, and broader but less distinct than in the male; no chestnut patch on the wing; under tail-coverts, spotted greyish-brown.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—The markings of the back and neck are reddish-brown speckled with darker brown.

BEAK. Blackish.

FEET. Dull deep yellow.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH ...	...	...	20 in.
WING ...	...	...	10.5 "
BEAK ..	...	...	2 "
TARSO-METATARSUS	...	...	1.5 "
EGG ...	...	...	2.1 × 1.5 in.

SHOVELER. *Spatula clypeata* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 14; Dresser, 'Birds of Europe,' vol. vi, pl. 425; Lilford, 'Coloured Figures,' vol. vii, pl. 35; Booth, 'Rough Notes,' vol. iii, pls. 5 and 6.

The Shoveler is another fresh-water Duck; only when the lakes and rivers are frost-bound is it driven to the tide. I have seen a few specimens shot on brackish water in close proximity to the Bay of Dublin. The beak, disproportionately large and somewhat spoon-shaped, distinguishes this species at once. At a distance the female and immature birds in their modest brown attire may be confounded with the female Mallard; the former, however, are distinctly smaller and appear of a more slender build when seen swimming on the water.

In winter in our Isles the Shoveler usually occurs in small parties and when apart from the company of other Ducks it is not notably shy.

Food.—A distinctive characteristic of this bird is the manner in which it feeds. When hungry, it darts about on the water, skimming or 'shovelling' its beak horizontally on the surface.¹ The mouth is kept slightly gaping, so that hundreds of small aquatic insects and plants, are taken in with the water and entrapped by a fringe of stiff bristles which borders either side of the upper segment of the beak. This species, in addition, eats worms, slugs, and snails, which fact is indicative of its feeding on land also. I have been in the company of a sportsman who shot a Shoveler just as it rose from the edge of a small pond. I examined its mouth immediately after death and found it full of thick mud, in which the bird had probably been searching before it was disturbed. The flesh is very palatable.

Flight.—The flight is strong and swift.

Voice.—The Shoveler on the whole appears to be a rather silent bird: in captivity I have heard it utter a feeble call-note which may be syllabled *uk-uk-uk-uk*.

Nest.—The Shoveler builds on the ground, in a tuft of

¹ I have also observed the Shoveler plunge its head under water and obtain food from the bottom of a shallow pond. When feeding in this way it will tilt its body so that the tail points vertically upwards and the feet are visible above the surface of the water.

coarse grass or among other vegetation tall enough to conceal the sitting bird; in some cases the cover is but scanty. The nest is made of grass and lined with down, and is usually placed near the water's edge, frequently along the shore of an inland lake. The eggs, of which eight to fourteen form the clutch, are pale greenish, turning to pale yellow as incubation advances.

This Duck is increasing in our Isles as a nesting-species. It has been found breeding in the following counties:—

England:—Cumberland, Northumberland, Durham, Yorkshire, Norfolk, Lincolnshire, Kent, Dorset, Nottinghamshire and Staffordshire.

Scotland:—Haddington, Elgin, Kirkcudbrightshire, Dumbartonshire, in the counties between the Forth and the Tay, northward to Sutherland, the Orkneys, and on Tiree, one of the Inner Hebrides (Saunders).

Ireland:—In this country the Shoveler appears to be increasing not only as a breeding-species but also as a winter-visitor. It has nested, or has been met with in the nesting-season, in the following counties:—Kerry, Cork, Waterford, Clare, Wexford, Queen's Co., King's Co., Westmeath, Dublin, Louth, Galway, Roscommon, Mayo, Sligo, Fermanagh, Monaghan, Tyrone, Antrim, Donegal (Ussher).

Geographical distribution.—Abroad, it breeds over the greater part of Europe, North Africa, Temperate Asia and North America. Its winter range extends to South Africa, India, China, Japan, Central America and Australia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head and upper neck, glossy-green; lower neck and scapulars, white; wing-coverts, pale blue; alar speculum glossy-green, separated from the blue by a narrow white band; primaries, chiefly dark brown; feathers of back, brown with lighter margins; rump, tail, and its coverts, blackish; breast and abdomen, rich chestnut, flanks, speckled reddish-brown; lower abdomen, white.

Adult male, post-nuptial or eclipse.—Somewhat resembles the female, but the bright blue of the wing is retained and the general plumage is of a warmer brown.

Adult female nuptial.—Head, neck, and back mottled with dark and light brown; wing-coverts, dull bluish; speculum, much less glossy than that of the male; breast and abdomen, pale brown.



Fig. 1.
SHOVELER (Male).



Fig. 2.
PINTAIL (Male).
From a specimen mounted by the late Mr. E. Williams.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female in plumage.

BEAK. Dull bluish-grey; disproportionately long and heavy, much expanded at the end, the sides of both segments being beset with long lamellæ or bristles.

FEET. Orange-red.

IRIDES. Golden-yellow.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	20·5	in.
WING	...	...	...	10	„
BEAK	...	...	...	2·8	„
TARSO-METATARSUS	...	...	...	1·4	„
EGG	...	...	...	2 × 1·4	in.

Note.—The beak of the nestling is proportionately longer and more slender than that of the Mallard or Gadwall, but when the Shoveler reaches the age of three weeks, the beak further increases in length and breadth, especially in the Drakes (Saunders).

PINTAIL. *Dafila acuta* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 18; Dresser, 'Birds of Europe,' vol. vi, pls. 430 and 431; Lilford, 'Coloured Figures,' vol. vii, pl. 36.

For elegance of form no British Duck surpasses the Pintail. It rests buoyantly on the water, where it can be identified among other Ducks by its slender build, long and graceful neck, and pointed tail. The adult male is readily recognised by a broad white stripe down either side of the neck and also by the great length and tapering shape of the middle tail-feathers; the latter are conspicuous, being raised off the surface of the water as the bird swims.¹

The Pintail is for the most part a winter-visitor to our Isles, and is found on inland as well as on tidal waters.

¹ The Pintail is sometimes called the Long-tailed Duck, owing to the length of its tail. But the plumage of the two species is so utterly different that they should not be confounded.

The southern coasts are most frequented. Immature birds arrive about the end of September, followed about a month later by the adults. In April it migrates to more northern climes, save a few pairs which remain to breed in Scotland.

I have repeatedly come across this fine species when boating by day, and have noted small and scattered flocks drifting on the tidal estuaries, in consort with countless hordes of Wigeon. Through a field-glass I have observed that while the latter were resting—some sleeping—the Pintails were actively feeding.¹ One by one their heads and long necks disappeared under water, their tails pointing vertically upwards² as they tilted their bodies forwards.

The Pintail is a shy and vigilant bird, especially when in company with other Ducks; as a rule its habits can only be studied from a distance with the aid of a field-glass, or the observer must be ambushed.

Food.—Like other non-diving Ducks, the Pintail quits the water at times in search of food. It visits stubbles, flooded fields, and marshes. Its diet consists of insects, worms, crabs, shrimps, various aquatic vegetables, and grasses.

Flight.—This bird is fast, but not buoyant on the wing; the rapid flutter of its pinions recalls the flight of Diving rather than of Surface-feeding Ducks.

Voice.—The voice is rather peculiar. It seems to me to resemble a low muttering. Montagu compares it to the crying of a young kitten.

Like most other Ducks the Pintail is readily tamed. Wild hybrids with Wigeon and Mallard have been raised. Its flesh is excellent.

Nest.—The nest is generally built on rather dry soil, and fairly well concealed by the surrounding vegetation. It is usually placed in the neighbourhood of water. The nest is well lined with down.

The eggs, which number seven to ten, are pale yellowish-green. Incubation begins about May.

We have no conclusive evidence that the Pintail has nested in England, but of later years it has bred on several

¹ Some authorities are of the opinion that the Pintail feeds chiefly at night; others maintain that it seeks its food almost entirely during day light.

² This attitude is not peculiar to the Pintail. Our farm-yard Ducks and many other wild species may be seen assuming a similar position when feeding under the surface of the water (see footnote p. 97).

occasions in Scotland, both on the mainland and on the Hebrides. Thus in June, 1881, Mr. Harvie-Brown found it breeding on one of the Inner Hebrides (Proc. Roy. Phys. Soc., Edin., 1881-83). In 1882 it bred in Sutherland (Harvie-Brown and Buckley, 'Fauna of Sutherland and Caithness,' 1887). Again in May, 1898, several nests were discovered on Loch Leven, in Kinross-shire (Evans, Ann. Scot. Nat. Hist., 1898, p. 162). The Pintail may also have bred in the Outer Hebrides (Harvie-Brown, 'Avifauna Of The Outer Hebrides,' 1888-1902; Ann. Scot. Nat. Hist., 1902-3).

With regard to the breeding of the Pintail in Ireland Mr. Ussher writes: "Lord Castletown has an egg measuring 2.14×1.6 in., which he informs me he took when a boy from a Pintail's nest near Granston, and this is the only instance I can cite of its breeding near Abbeyleix."

Geographical distribution.—Abroad, the Pintail breeds freely in Northern Europe (including Iceland), Asia and America. It also breeds in Holland, and more sparingly on other parts of the Continent of Central Europe. On migration in winter, it reaches to the south of Europe, and to Africa as far as Egypt. In an eastern direction it can be traced to India, China and Japan, while on the American Continent it descends to the West Indies and Panama.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head and upper neck, brown, reflecting shades of dark green and bronze; on the sides of the neck this colour is interrupted by a noticeable white stripe, narrow above where it begins at the back of the head, and broadening out below until it finally blends with the white of the lower neck, breast and abdomen; back and flanks finely chequered grey; wing-coverts, grey; alar speculum, lustrous bronze-green, margined below with black and white, and above with bright buff; primaries, greyish, these when the wing is folded are covered for the most part by the long and narrow inner secondaries, which are black in colour with white margins tinged with light buff; central tail-feathers, long and pointed, and brownish-black; rest of the tail-feathers, grey-brown, edged with white; under tail-coverts, black.

Adult male, post-nuptial or eclipse.—This plumage is assumed in July and retained until October. It somewhat

resembles that of the female, but is distinguished by the presence of the bronze-green alar speculum.

Adult female nuptial.—Head, neck, back, scapulars and wings, mottled-brown; breast and abdomen, greyish-white; tail-feathers, barred with buff and dark brown; middle tail-feathers not prolonged much further than the rest.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female plumage, but the young male can be distinguished by the presence of the alar speculum.

BEAK. Slate-grey.

FEET. Slate-grey.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	28 in. (including the long central tail-feathers).
WING	...	...	...	11 in.
BEAK	...	...	...	2 "
TARSO-METATARSUS	...	...	...	1.85 "
EGG	...	...	...	2.1 × 1.5 in.

Note.—In several old drakes which I measured, I found that the central tail-feathers averaged about 7.5 to 8 in.

TEAL. *Nettion crecca* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 16; Dresser, 'Birds of Europe,' vol. vi, pl. 426; Lilford, 'Coloured Figures,' vol. vii, pl. 37.

Diminutive in size and of dainty appearance, the Teal is familiar to most of us as a widely distributed and common Duck in our Islands. Its numbers are increased in autumn and winter by migrants which reach our shores, some arriving early in September. No common British bird has found more favour, or has attracted more attention than this neat little game-bird. The scientific and patient observer, who watches its habits without destructive intent, is filled with admiration at the activity displayed, as the Teal glides gaily to and fro on a sheltered pond or stream.

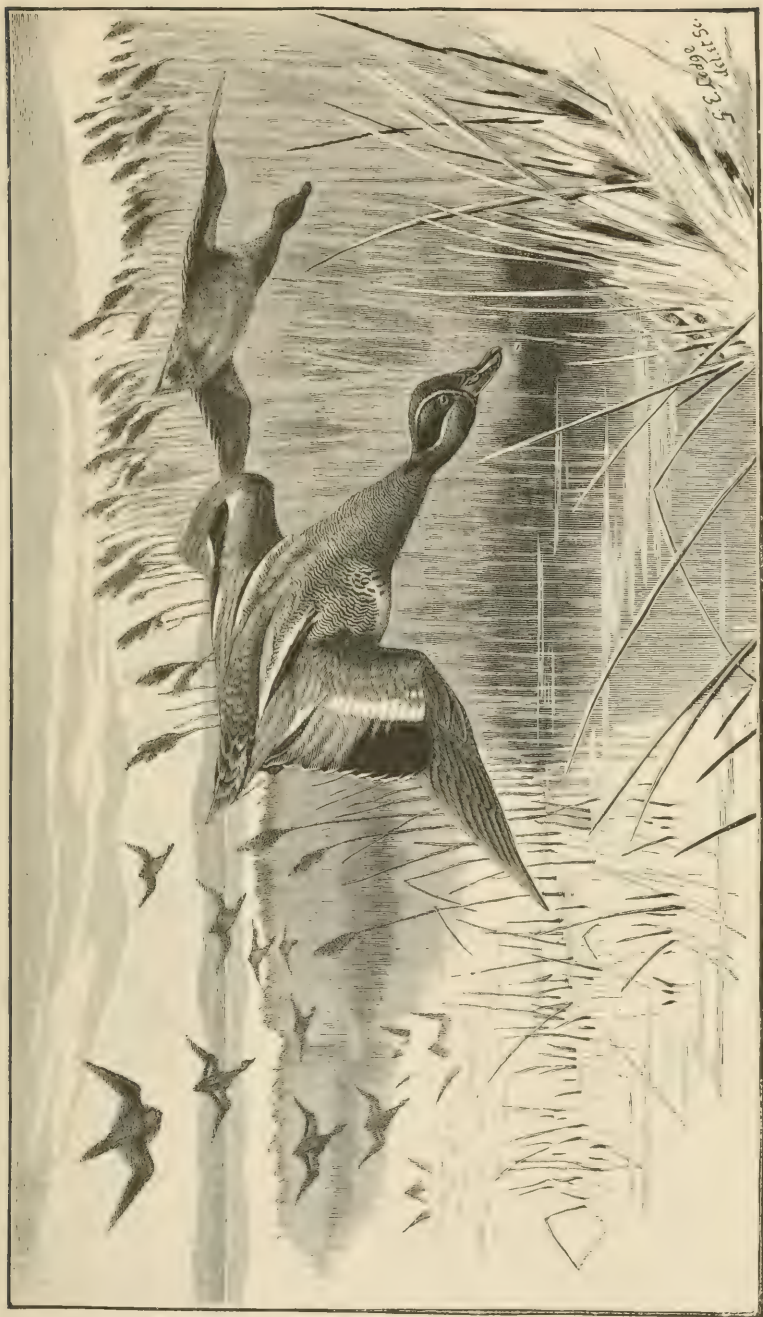


FIG. 15.—TEAL 'PUT IN' BY PEREGRINE FALCON.

When alarmed it suddenly shoots upwards with marvellous speed, as though it were projected by a strong spring into the air, and then off it flies, twisting and turning with a strength and velocity hardly inferior to that of the fleeting Dove or the swooping Falcon. The gunner rejoices when he gets among a wisp of Teal; the rapid flight more than tests his aim; quickly he tries a snap-shot, down comes his game, only one grain of shot in the wing, but the frail little bone has been broken and the beautiful flight is ended. Then the taxidermist, pent up in his work-room, finds his subject all-absorbing, as he models the dainty form and arranges the pretty plumes of this miniature Duck.

The Teal loves quiet inland waters, and may be found on pools and canals of small size. Though it is not by any means a coast-loving bird, yet considerable numbers may be seen in our bays and creeks in the autumn and winter. Hard and continued frost drives it to the coast, when as many as five hundred have been counted together on the tideway. Thompson states that between August and September he has noted as many as fifty in Belfast Bay.

I have shot Teal on the tops of mountains, among dry heath and gorse, and once, when boating, caught an adult female bird which was hiding in the shelter of an overhanging embankment of a river. I let the boat drift towards her, and was on the point of seizing her, when she dived like a flash, and had I not immediately thrust my arm full length under water, she would have escaped. The bird was not moulting and flew away, strong on the wing, when liberated.

Food.—Food is sought for mainly in the early morning and in the twilight, when the bird visits the ditches, bog-lands and stubble, in search of vegetables, seeds, grasses, worms, slugs, and in warm countries, rice. I have observed this little Duck at mid-day, picking at the reeds growing by a river-bank. It is one of the most palatable of game birds.

Voice.—The voice is harsh and loud for the size of the bird. The note may be syllabled *qūāe-qūi-qūi*.

Flight.—The flight of the Teal is more rapid and glancing than that of the larger Ducks, but when flushed from cover it has a habit of alighting at no great distance from where it has been disturbed. Sportsmen acquainted with this habit can often make good bags by following up the birds. Thus, I have seen a family party, consisting of

the two adults and eight young birds—all strong on the wing—completely wiped out in a couple of hours by a gunner who followed them up and shot them one by one. The birds when first discovered, were feeding together on a marsh, but as they rose they scattered. Captain G. Gould estimates the speed of this bird on the wing to be one hundred and forty-four miles per hour. I have seen Teal swoop down from a height in the air to the water with as great an impetus as that acquired by a flock of Golden Plover when a shot is fired into their midst.

Nest.—Though the nest is invariably placed on the ground, yet the breeding-haunts of the Teal vary considerably. I have found the nest under heath-tufts, on damp turfy soil, among high sedges and reeds by the river's side, as well as in the stunted and scanty herbage of rough, low-lying pasture-land. In the co. Mayo, in the year 1898, I discovered a Teal breeding among heather near the summit of a hill, while fifty feet lower down a pair of Curlews were nesting on flat and somewhat damp ground. Dry grass is the chief material of which the nest is composed; when built in heath, stems of that plant are frequently utilised. The nest is lined with down. The eggs, ranging from eight to ten, and even more in the clutch, are of a rich creamy-white colour, some showing a tinge of pale bluish-green. Incubation begins about May.

The Teal is easily tamed and breeds freely on aquatic preserves: hybrids frequently have been raised.

This Duck nests throughout the British Isles; in the Outer Hebrides, where it hitherto has been looked upon as a rare species, it is now increasing, and no doubt breeds in North and South Uist (Harvie-Brown, 'Avifauna Of The Outer Hebrides,' 1888-1902, Ann. Scot. Nat. Hist., 1902-3).

Geographical distribution.—Abroad, this Duck is found nesting over a vast area of the European and Asiatic Continents, also in North Africa. Its winter migrations extend to Tropical Africa and Asia. Our bird has occasionally wandered to the American coast, but its true representative is the next species, the American Green-winged Teal, *Nettion carolinense*.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, back of neck, cheeks, and throat, rich reddish-brown; behind the eye is a patch of glossy-green, which extends down the side of the neck for a short distance; above and below this patch

are narrow, whitish-yellow lines, which meet in front of the eye, and are then prolonged as a single line to the base of the beak and chin; back, scapulars, and wings, finely pencilled with grey and white; lower back, and upper tail-coverts, very dark brown, latter edged with rufous; tail, ash-brown; under tail-coverts, nearly black in the centre, and buff-colour on each side; wing-coverts, brownish, with a brilliant lustrous-green and purple-black speculum which is edged with white; chin, black; front of neck, warm buff, spotted with black; breast and abdomen, white; flanks, pencilled like the back.

Adult male, post-nuptial or eclipse.—From July until October the drake assumes a plumage somewhat like that of the female.

Adult female nuptial.—The general plumage of the female consists of a mottling of brown and buff, the latter colour showing chiefly as edgings to the feathers of the upper parts; on the side of the neck and throat the buff predominates; on the top of the head the brown is more marked.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Almost similar to the female, but the brown on the breast and abdomen is darker, and more mottled.

BEAK. Blackish-brown.

FEET. Dull greyish-brown.

IRIDES. Brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	14.5	in.
WING	...	...	...	7.25	„
BEAK	...	...	...	1.5	„
TARSO-METATARSUS	...	...	...	1	„
EGG	...	...	...	1.8 × 1.2	in.

AMERICAN GREEN-WINGED TEAL. *Nettion carolinense* (J. F. Gmelin).

Coloured Figures.—Lilford, 'Coloured Figures,' vol. vii, pl. 38.

There are three records of this extremely rare visitor. The first was shot at Hants, prior to 1840. The second, an

adult male, occurred near Scarborough, in November, 1851. The third, also an adult male, was shot on November 23rd, 1879, in South Devon (Saunders).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—The adult male, on the whole, resembles our own bird, but the delicate pencilling of the plumage is more minute. On the side of the breast and lower neck there is a broad crescent-shaped band of finely vermiculated greyish-white feathers; the yellowish lines on the cheeks and round the eye are less defined than are those of the common Teal.

Adult male, post-nuptial or eclipse.—Somewhat similar to the female plumage.

Adult female nuptial.—The plumage of the female is practically the same as that of the female of the preceding species.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female plumage.

BEAK. Black.

FEET. Bluish-grey.

IRIDES. Brown.

EGG. Yellowish-white: clutch, seven to twelve.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	14.5	in.
WING	...	...	...	7.25	„
BEAK	...	...	...	1.5	„
TARSO-METATARSUS	...	...	...	1.1	„
EGG	...	...	...	1.8 × 1.25	in.

BLUE-WINGED TEAL. (*Querquedula discors* (Linnaeus).

Coloured Figures.—Lilford, 'Coloured Figures,' vol. vii, pl. 40.

Another extremely rare and accidental wanderer to our shores. There is but one genuine record, viz., a specimen shot at Dunfries in 1858. It is a male bird and is preserved in the Edinburgh Museum (Saunders).

DESCRIPTIVE CHARACTERS.

Adult male nuptial.—Top of head, greyish; throat, much the same shade; white crescent-shaped patch in front of eye; rest of cheeks and neck 'french' grey; back, mottled with light red; on each wing there is a broad white stripe and a bronze green patch, wing-coverts, as described by Mr. Saunders 'lapis lazuli' blue (far more vivid than in our Garganey). Breast and abdomen, pale reddish.

Adult male, post-nuptial or eclipse.—Resembles the female plumage, but the wings are brighter in colour.

Adult female nuptial.—The female is speckled brown and light yellow and the eye-stripe is ill-defined.

Adult winter, male and female.—Similar to the respective nuptial plumage.

Immature, male and female.—Resembles the adult female plumage, but the lustrous blue speculum is wanting.

BEAK. Black.

FEET. Yellowish.

IRIDES. Brown.

EGGS. Pale yellowish-white: clutch, eight to twelve.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	16	in.
WING	...	...	...	7.5	„
BEAK	...	...	...	1.75	„
TARSO-METATARSUS	...	...	...	1.2	„
EGG	...	...	...	1.85	× 1.35 in.

GARGANEY. *Querquedula ciria* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 17; Dresser, 'Birds of Europe,' vol. vi, pl. 427; Lilford, 'Coloured Figures,' vol. vii, pl. 39.

This pretty little Duck—not much larger than the Teal—is generally known as a spring migrant. It is very rare in winter, a season when most species of Ducks are to be seen about our shores. The Garganey is seldom met with in autumn on its migration southward. Like the Teal it frequents both fresh and tidal waters: it has been recorded mainly from maritime counties or at any rate from those

not far from the coasts. It seems to be rarer in Scotland,¹ Wales, and Ireland, than in England. In Ireland it has been recorded from the following counties :—Clare, Cork, Carlow, Wicklow, Dublin, King's Co., Westmeath, Mayo, Fermanagh and Down (Ussher).

In England, Norfolk, Suffolk, Lincoln, and Yorkshire, are visited most regularly. In its habits the Garganey strongly resembles the Teal. Its flight is rapid; its pose on the water buoyant; and of man, boat, or dog, it exhibits no great dread. Thus with reference to three Garganey shot by Sir R. Payne-Gallwey in Cork Harbour, in March, 1878, he mentions that "they were very tame and allowed me to kill two of them on the water, and a third flying, from an ordinary boat, with a shoulder-gun" ('Fowler in Ireland,' p. 63).

The drake Garganey may be distinguished from the Teal on the water, by the white stripe which extends from above the eye backwards and downwards along the neck. The female is more difficult to recognise.

Flight.—The flight is very rapid and on the wing the Garganey might easily be mistaken for the Teal.

Food.—The food consists chiefly of fish and molluscs, with very little vegetable matter.

As a bird for the table this Duck is not considered good by some authorities, while by others it is highly esteemed.

Voice.—The name of 'Cricket Teal' has been applied to this species on account of the curious vibratile or rattling sound produced by the drake's voice in the spring.

Nest.—This bird nests on marshy low-lands, also in drier and more elevated districts among heather. Its breeding-haunts, in fact, resemble those of the Teal. The nest is made chiefly of dry grass and is lined with down.

The eggs, eight to thirteen in number, are creamy-white in colour. Incubation begins about the end of April.

The Garganey is a rare British nesting-species. But to Norfolk, where protection is afforded it—and particularly in the 'Broad' district—this Duck resorts annually to breed, while in the following counties there is also evidence that it probably has nested :—Suffolk, Lincolnshire, Cambridgeshire, Huntingdonshire, Warwickshire, Hampshire and Yorkshire.

¹ This Duck was not observed in Scotland until March, 1841, when four were shot near Stirling (Macgillivray).

Geographical distribution.—Abroad, the Garganey breeds over a large area of Temperate Europe, especially in the Eastern section, also in Asia. It winters in Southern Europe, North and Tropical Africa, India, China, and Japan, visiting the Phillipines and other neighbouring islands in the Tropics.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head and back of neck, dark brown; cheeks and throat, rich reddish-brown, pencilled with short thin lines of white; extending from the front of each eye to the nape of the neck is a noticeable white band, by which the Garganey may be distinguished at some distance; back, dark brown with a lighter edge to the feathers; wing-coverts, chiefly bluish-grey with a green speculum margined by two white bars; scapulars, long and pointed, black in colour, each with a central line of white; primaries and tail, brown; chin, black; breast, light brown, each feather being edged with a dark brown crescent; abdomen, white; flanks, coarsely pencilled with transverse lines of black on a white ground; under the tail these dark lines shorten into spots.

Adult male, post-nuptial or eclipse.—Resembles the adult female plumage, but the alar speculum is much brighter.

Adult female nuptial.—Head more coarsely spotted with shades of brown; face-line much less distinct, smaller than in the male and yellowish rather than pure white; back, rather similar in colour to the drake, but with a bolder pattern; wing-coverts, chiefly greyish-brown; chin, white; breast, chequered in different shades of greyish-white and brown; sides and flanks, chequered light and dark brown.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the adult female plumage.

BEAK. Black.

FEET. Greenish-grey.

IRIDES. Hazel.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	16 in.	Female smaller.
WING	...	...	7·8 „	
BEAK	...	..	1·5 „	
TARSO-METATARSUS	...	...	1·3 „	
EGG	...	...	1·85 × 1·35 in.	

WIGEON. *Mareca penelope* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 13; Dresser, 'Birds of Europe,' vol. vi, pls. 432, 433; Lilford, 'Coloured Figures,' vol. vii, pl. 41.

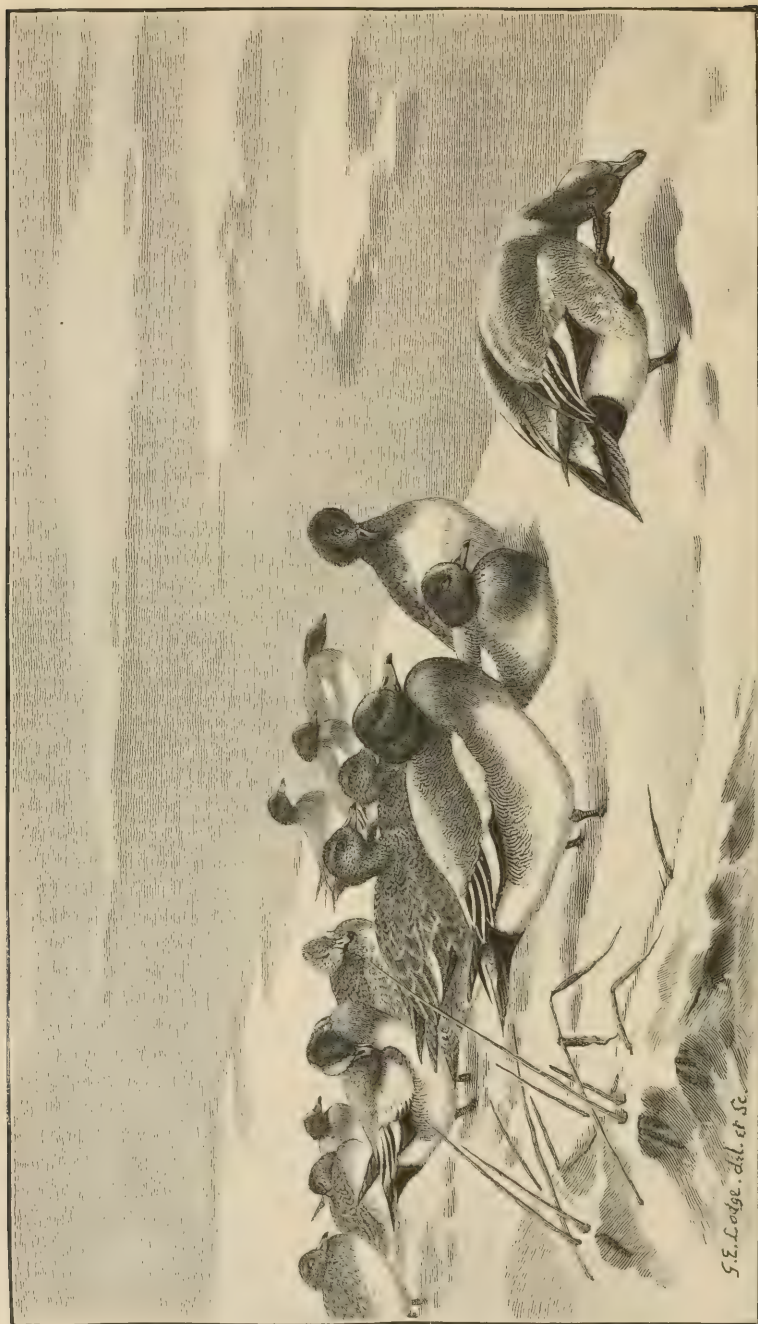
Hundreds of Wigeon visit our coasts in late autumn and winter, taking their departure about March, to breed in more northern regions. The majority arrive in October, preceded by a few immature birds which reach us during the latter end of August. I have seen small numbers of immature Wigeon as early as August 14th, feeding with Oyster-catchers and Gulls on the ooze-flats of Dublin Bay. They appeared fatigued and were comparatively tame.

Though essentially maritime, yet large sheets of fresh water, and less frequently small lakes, rivers and marshes, also afford this species *natural habitat*.

Intensely cold and boisterous weather, when inland waters are frozen over, drives vast assemblages of Wigeon to our bays and estuaries. Viewed at a distance with the unaided eye, these Ducks resemble a long, irregular and broken line of black sea-wrack tossing up and down on the angry breakers, or tiny dark specks strewing the sea for many acres round. It would repay the bird-lover to take a ramble along the beach at high water, and study these familiar, yet interesting, sea-fowl. From the cover of a sand-dune, he can see the hardy little creatures pitching about asleep on the waters, despite the approaching hurricane. Among them are a few Pintails, Mallards, Scaups, Scoters, Cormorants and Gulls, scarcely able to cope with wind and wave. But in this great multitude of Wigeon, there are many awake and lively. The yellow-headed drakes are speeding across the water in hot pursuit, some are diving to escape, others washing, splashing and sitting up on end flapping their wings.

Their merry whistle may be heard clearly above the roar of the breakers. Now something has disturbed them! They stretch their necks and look intently upwards in great excitement.

What keen sight they possess! They have been watching for some time what still appears a mere speck in the air. A Peregrine Falcon! They recognise their foe long before the onlooker can even discern that it is an approaching bird. Ere a minute has elapsed the Falcon is directly overhead. A magnificent sight! One great swoop to the



J.E. Lodge. del. et sc.

FIG. 16. — WIGEON ON THE SNOW.

water and he is up again, but without his prey, and the Ducks and other birds closely pack, keeping to the water, their only sanctuary. A very Babel of sound now fills the air, as the flocks, by their angry threats, endeavour to drive off the enemy. There is much confusion in the ranks; some, more frightened than the rest, immediately dive, but none attempt to fly as long as the Peregrine lurks overhead. Now, however, the attention of the Falcon is attracted by a flock of Plover, crossing the estuary. In a moment he is among them, and, singling out his victim, enters on his deadly chase. Out over the sea the two birds fly until finally they disappear from view.

Wigeon do not invariably remain on the water when disturbed by the first sight of the Falcon in the distance. I have seen thousands of them rise and join with immense companies of 'waders,' the great dark cloud of birds utterly deserting the estuaries and sand-flats for miles around.

Wigeon are very sociable; an entire flock will rest, fly, and feed together. Unlike the Mallard and many other species of Ducks, they usually rise in silence, and do not whistle until they are well on the wing. "On inland waters they may often be seen in company with Coots, and will watch the latter diving for and bringing up pond-weed, when they rush in and seize it" (Ussher).

Food.—In their movements Wigeon are most regular. By day they rest on the water, especially during high tide, and after dusk¹ visit the *Zostera*-covered sand-flats, to feed, varying their hours according to the tide. They assemble at their feeding-grounds as the ooze becomes bare. They are then usually silent, save a soft purr of satisfaction which is uttered by the females when undisturbed.

As an article of food, the Wigeon is much sought after, and is sorely persecuted by the 'punt gunner.' Although vast quantities are destroyed for the markets, it is pleasant to think that this pretty Duck is not sensibly diminishing in numbers. It is practically marine in its habits, yet its flesh is palatable. This is so because the bird is not, as a rule, a lover of shell-fish, feeding almost entirely on vegetable matter. I have occasionally tasted very 'fishy' Wigeon, old birds shot on the coast, and have found shell-fish and marine-worms in the gizzards of a few.

¹ In localities where Wigeon are not harassed by gunners they will feed also during the day.

Flight.—Wigeon can remain a long time on the wing, and even in rough weather flocks may be seen travelling with great velocity at a considerable height in the air.

Voice.—The whistle of the drake sounds like *whēē-ōō*; it is shrill yet mellow, and once heard is not easily forgotten. The *purr* of the female has already been described.

Nest.—This Duck breeds on the ground, and generally not far from a fresh-water lake or pond. The nest is built, for the most part, of dry grass and weeds, and is concealed in a tuft of rushes or other herbage: a tuft of heather is a favourite nesting-site. The eggs, five to ten in number, are light creamy-yellow.

There are but few records of the Wigeon nesting in England, but in the following counties there is evidence of its having probably bred:—Yorkshire, Cheshire, Norfolk, and Sussex (Harting, 'Handbook of British Birds,' p. 246; Stevenson, 'Birds of Norfolk,' iii, p. 188; Borrer, 'Birds of Sussex,' p. 350).

In Scotland the nest has been obtained in Sutherland, Caithness, Ross, Cromarty, Perth, and Selkirk, also in the Orkneys and Shetlands (Saunders). This Duck has not been recorded as a nesting-species from the Outer Hebrides, but a flapper was shot on North Uist in August, 1891 (Harvie-Brown, 'Avifauna, Outer Hebrides,' 1888-1902, Ann. Scot. Nat. Hist., 1902-3).

In Ireland the Wigeon has perhaps bred, though proof of this is still wanting. In his 'Birds of Ireland,' Mr. Ussher cites several instances of adult birds seen in the height of the breeding-season: for instance on June 3rd, 1893, he saw a male and female on a lake in co. Leitrim. Sir Douglas Brooke has shot very young birds in Fermanagh on August 1st, and Lord Caledon has observed this Duck in the co. Tyrone in summer, while in June, 1892, Mr. R. Patterson saw Wigeon repeatedly on Lough Fern, co. Donegal.

Quite recently, viz., in May, 1901, eggs were taken by Mr. John Cottney in the vicinity of Belfast, and submitted to Mr. Ussher and Mr. R. Patterson, who first reported them to be those of the Wigeon, but after a thorough examination not only of the *down* but also of small feathers in the nest, the eggs were shown to be those of the Shoveler ('Zoologist,' 1901, p. 269, and 'Irish Naturalist,' 1901, p. 147, and *ibid.*, 1903, p. 275).

The Wigeon is easily tamed and is a pretty addition to an ornamental pond.

Geographical distribution.—Abroad, the Wigeon breeds abundantly in Northern Europe, and in small numbers in Holland, Denmark, and North Germany. Eastward it nests in Central and North Asia, and on the North American Continent may be traced round to Alaska. On migration it is found over Central and Southern Europe, North Africa, Tropical Asia, occurring also along the North American sea-board.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, rich chrome-buff; rest of head and upper neck, warm chestnut, the hind part of the latter finely spotted with light green; chin, black; lower neck and upper breast, pale pinkish-grey; lower breast and abdomen, white; back and flanks, finely pencilled or vermiculated with grey; wing-coverts, white; speculum, green, edged above and below with black; narrow pointed secondaries, chiefly black, edged with white; primaries, brown; tail, brown; under tail-coverts, black.

Adult male, post-nuptial or eclipse.—This plumage is assumed about the middle of June. It somewhat resembles the female plumage, but is of a much more ruddy hue.

Adult female nuptial.—Back and wings, mottled greyish-brown; breast and abdomen, greyish-white.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female in plumage.

BEAK. Bright lead-blue, tipped with black.

FEET. Dark greyish-brown.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	18.5	in.
WING	...	...	10.5	„
BEAK	...	...	1.5	„
TARSO-METATARSUS	...	...	1.5	„
EGG	...	...	2.3 × 1.5	in.

AMERICAN WIGEON. *Mareca americana* (J. F. Gmelin).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. ix, pl. 707;
Lilford, *Coloured Figures*, vol. vii, pl. 42.

I know of only two well authenticated instances of this very rare visitor. A specimen was obtained by Mr. Bartlett in a London market in the winter of 1837-38. In February of 1895, after a lapse of fifty-seven years, Sir Ralph Payne-Gallwey secured, through Mr. R. Lee, of Thirsk, a young male from a game-dealer in Leeds.

The few Scotch and Irish occurrences are so unsubstantiated that the American Wigeon may be excluded from the avifauna of these countries.

In the 'Zoologist' for 1901, p. 411, Mr. F. Coburn gives an interesting account of an expedition to the north of Iceland, where he discovered the American Wigeon breeding.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Crown of head, dull white; on each side of the head, a broad streak of green extends from the eye to the hind-neck; cheeks, chin, throat, neck, whitish, speckled with black; back, brownish, vermiculated with black; wing-coverts, light brown shading to white; speculum, metallic-green edged above with black; primaries, brown; inner secondaries elongated, black with white edges; breast and sides, reddish-brown; abdomen, white; tail, brown.

Adult male, post-nuptial or eclipse.—Somewhat resembles the female plumage.

Adult female nuptial.—Head and neck, yellowish-white speckled with black; breast duller than that of the male; back, dark brown.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female, but the young male has a more defined wing-pattern.

BEAK. Greyish-blue with a black tip.

FEET. Bluish.

IRIDES. Brown.

EGGS. Pure white: clutch, seven to ten.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	19	in.
WING	...	...	10.5	„
BEAK	...	...	1.3	„
TARSO-METATARSUS	...	...	1.5	„
EGG	...	...	2.1	× 1.5 in.

RED-CRESTED POCHARD. *Netta rufina* (Pallas).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 22; Dresser, 'Birds of Europe,' vol. vi, pl. 435; Lilford, 'Coloured Figures,' vol. vii, pl. 43.

The Red-crested Pochard is a very rare wanderer to the British Isles, its breeding-haunts being Southern Europe, North Africa and Asia. The earliest occurrence known is that of a female, obtained in Norfolk in 1818 (Saunders). Several others have been recorded from the same county. It has subsequently been obtained in the following countries:—Northumberland, Westmoreland, Lincoln, Essex, Devon, Cornwall, Pembroke, occurring, as may be seen, most frequently on the east coast.¹ There are other records from London markets (Leadenhall), and from the Thames.

In Scotland, there appears to be but one capture recorded, namely, a bird taken in Argyll, January, 1862 (Gray, 'Birds of West Scotland').

Likewise from Ireland, only one example has been recorded, namely, a bird obtained near Tralee, co. Kerry, January 18th, 1881 (Ussher, 'Zoologist,' 1881, p. 143), and exhibited by More, before the Zoological Society of London, on March 15th, 1881 (Proc. Zool. Soc., 1881, p. 409).

The rich, handsome plumage of the adult male should at once attract the attention of the observer in the field.

Food.—This Pochard feeds on a variety of aquatic creatures, on frogs, fish, insects, and vegetable matter. Its flesh is considered palatable.

Voice.—The voice is loud, consisting of harsh, deep notes, uttered chiefly at night; the male also whistles in a high key.

¹ Recently, a specimen was shot at Redcar, in Yorkshire, on January 20th, 1900 (T. H. Nelson, 'Zoologist,' 1900, p. 483).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head and crest, light chestnut ; rest of head and upper neck, dark chestnut ; lower neck, breast, and abdomen, very dark brown ; flanks, white with a pinkish hue ; back and scapulars, yellowish-brown, with two white shoulder-bands ; secondaries, banded with white ; coverts of wing-fold, bordered white ; primaries, greyish-white, tipped with brown ; tail,¹ ash-brown ; upper tail-coverts, dark brown.

Adult male, post-nuptial or eclipse.—Resembles the adult female plumage, but distinguished by the presence of the crest.

Adult female nuptial.—Crest absent ; top of head, darker brown than in the male ; cheeks and throat, impure white ; back and breast shading from pale red to greyish-brown ; shoulder-band, dull white.

Adult winter, male and female.—Resembles the respective nuptial plumages.

Immature, male and female.—Resembles the female, in plumage.

BEAK. Brilliant red ; tip, yellow.

FEET.² Vermilion red ; webs, nearly black.

IRIDES. Red.

EGGS. Bluish-green : clutch, about ten.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	22	in.
WING	...	...	...	10.5	„
BEAK	...	...	...	1.9	„
TARSO-METATARSUS	...	...	...	1.5	„
EGG	...	...	...	2.3	× 1.6 in.

POCHARD. *Fuligula ferina* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 20 ; Dresser, 'Birds of Europe,' vol. vi, pl. 434 ; Lilford, 'Coloured Figures,' vol. vii, pl. 44 ; Booth, 'Rough Notes,' vol. iii, pl. 12.

The Pochard is best known as a winter-migrant, yet it breeds sparingly in the British Isles. Considerable num-

¹ Tail consists of sixteen feathers, only fourteen in the Common Pochard.

² The hind toe is broadly lobed as in other Diving Ducks.

bers make their appearance during October around our coasts and on inland waters; about March they migrate northward to breed. The Pochard is more often to be seen on large sheets of fresh water than on the tideway. Even in frosty weather this Duck is not anxious to change its quarters, and will remain on a lake as long as there is a small portion not frozen where it can procure its food by diving. Travelling under water for some distance, this bird, as it rises to the surface, may encounter the ice, and being unable to obtain air, become suffocated. Dead Pochards have repeatedly been found beneath the ice, especially in shallow water; but prolonged and severe frost will eventually drive this species to the coast, and large numbers will also collect on estuaries after a heavy gale.

The male Pochard, with his red head and light grey back, can usually be identified with no great difficulty on the water. No other common Diving Duck, frequenting inland lakes, resembles him in plumage. The Scaup has, like the Pochard, a grey back, but its head is black, and it is almost exclusively maritime in its habits. The male Wigeon, not unlike the male Pochard in colour, could hardly be mistaken for it, as the former is not a Diving Duck, and rests much higher on the water. In build, the Pochard is thickset and clumsy; it progresses slowly and awkwardly on land, another difference between it and the active little Wigeon. When unmolested, the Pochard is not very shy. I have often watched several scores of these birds swimming and diving some fifty yards from the edge of a lake. They swim so low on the water that they appear smaller than they really are, and some of their movements are rather strange. Thus, a flock will seldom pack closely, the birds preferring to scatter widely over the water, where they may be seen diving in rapid succession. They constantly cross and recross one another, swimming over a considerable area between each dive. When one of the party is shot, the others, after taking a short flight, will sometimes return to the same place.

Food.—Food is procured by diving, chiefly in shallow water. Pond-weed is largely eaten, but birds frequenting salt water descend to the bottom for shell-fish and crabs.

Flight.—The Pochard is often reluctant to fly, even to escape danger, and like other Diving Ducks, it is not buoyant on the wing. It seldom takes long flights, except when migrating, and dislikes crossing overland. When alarmed,

it skims along the surface of the water, resting again a few hundred yards ahead; but it chiefly avoids capture by diving.

Voice.—The male whistles, and both sexes utter a curious alarm-note, which may be syllabled *curre-curre-curre*.

Nest.—The Pochard breeds in rather damp situations, building its nest among the sedges and rushes, which skirt the margins of ponds and swamps. The eggs, seven to ten, or more in number, are dull greenish-yellow.

In England, it has been found nesting in Norfolk, Yorkshire, Lancashire, Dorsetshire, Hertfordshire, and other localities (Saunders).

In Scotland, the nest has been found in Ross-shire, Moray, Perthshire, Fifeshire, Roxburghshire, in Tiree on the Inner Hebrides; also in the Orkneys (Buckley, 'Fauna of the Orkneys').

With regard to Ireland, there seems as yet to be no proof, though there is strong presumptive evidence that this Duck has nested in the following counties:—Kerry, Tipperary, Westmeath, Meath, Sligo, Down, Antrim: but Mr. Ussher says, "my own researches, in many counties, have been unsuccessful as regards the breeding of this bird" ('Birds of Ireland,' p. 204).

Many Pochards are occupants of our ornamental waters, where they breed. Wild hybrids with the Ferruginous Duck have been captured and recorded.

Geographical distribution.—Abroad, the Pochard breeds over a large area of Temperate Europe and Asia, migrating in winter beyond the latitude of our Isles to Southern Europe, North Africa, Southern Asia, as far east as Japan.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head and neck, warm chestnut; upper breast and back, black; rest of back, finely dusted with grey; wings, chiefly grey, including speculum; primaries, brown; lower breast and abdomen, greyish-white; tail and its coverts, nearly black.

Adult male, post-nuptial or eclipse.—Head brownish; breast streaked with grey; otherwise resembles the male nuptial plumage.

Adult female nuptial.—Head, neck, and breast, dull brown; chin, whitish; back, breast and abdomen, deeper and duller in colour than in the male.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female plumage.

BEAK. Black at the base and tip, the intermediate portion being bright slate-blue.

FEET. Dull bluish-grey.

IRIDES. Crimson.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	19 in.
WING	...	...	...	8·25 in.
BEAK	...	...	...	2·25 „
TARSO-METATARSUS	...	...	...	1·5 „
EGG	...	...	...	2·4 × 1·7 in.

Allied Species and Representative Forms.—*F. americana* with no black at the base of the beak, and with back and abdomen of a lighter shade, is the American representative.

FERRUGINOUS DUCK. *Fuligula nyroca* (Güldenstädt).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 21; Dresser, 'Birds of Europe,' vol. vi, pl. 438; Lilford, 'Coloured Figures,' vol. vii, pl. 45.

The Ferruginous Duck is a rare visitor to the British Isles, occurring chiefly in winter and early spring.

In England, it has been met with most often along the east coast. Norfolk has contributed over twenty examples; specimens have also been procured from Suffolk, Cambridge, Yorkshire, Nottinghamshire, Lancashire, Northumberland, Oxfordshire, Dorset, Devon, and Radnorshire. Some two or three examples have been recorded from Scotland, about the Firth of Forth and the Tay (W. Evans).

It has been recorded on six occasions from Ireland; once from Dublin, and once from Antrim, March, 1871; twice from Westmeath, January 21st, 1893, and January 18th, 1897; twice from the east coast, 1879; once from the south of Ireland, November 27th, 1897 (Ussher).

The Ferruginous Duck has occasionally been obtained in the London markets, but when so procured, is more probably Continental than British in origin.

This bird, when viewed at a distance, might be mistaken for a female Pochard, but a closer inspection will show that the latter is larger and has a lighter-coloured back. The white eye of the Ferruginous Duck is a distinguishing feature. This species is not, by any means, partial to the sea-coast; it resorts to ponds, where weeds are plentiful and where it can lurk about, concealed from view.

Food.—Food is taken chiefly during the day, and consists of various aquatic vegetables, insects, shell-fish, and frogs.

This Duck can dive to a great depth and can travel at a rapid rate under water.

Flight.—Like that of most Diving Ducks, its flight is heavy and not buoyant.

Voice.—The note is harsh, resembling the syllables *curr-curr*, repeated many times.

Nest.—The nest is built among reeds, in close vicinity to water.

The eggs, seven to fourteen in number, are dull white, shading to cream-colour.

The Ferruginous Duck thrives well in captivity and mates with other species.

Geographical distribution.—The breeding-range of this species extends over Central and Southern Europe, Temperate Asia (being abundant in Kashmir), and North Africa.

In winter the Ferruginous Duck migrates to India, Egypt and Abyssinia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, neck, upper breast and flanks, rich mahogany-brown; small white patch on chin; breast and abdomen, white; back, scapulars, and wings, chiefly dull brown with a greenish tinge; speculum, white, bordered with black; primaries, brownish-black; tail, black, under tail-coverts, white.

Adult male, post-nuptial or eclipse.—It would appear that no other plumage is assumed by the male more closely resembling that of the female.

Adult female nuptial.—The head and neck are darker and much duller in colour than in the male, while the breast and abdomen are greyish rather than pure white.

Adult winter, male and female.—Similar to the respective nuptial plumage.

Immature, male and female.—Bears a general resemblance to the female plumage, but the shades are duller.

BEAK. Deep slate-colour.

FEET. Deep slate-colour, but webs darker.

IRIDES. White, commonly called 'pearl.'

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	16	in.
WING	...	...	...	7.75	„
BEAK	...	...	...	2.25	„
TARSO-METATARSUS	...	...	...	1.2	„
EGG	...	...	...	2.1	× 1.5 in.

Allied Species and Representative Forms.—*F. bari* is the genuine Eastern representative.

TUFTED DUCK. *Fuligula cristata* (Leach).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 23; Dresser, 'Birds of Europe,' vol. vi, pl. 437; Lilford, 'Coloured Figures,' vol. vii, pl. 47.

This familiar species, known to sportsmen as the 'Magpie Diver,' is generally distributed over the British Isles. It is resident in many counties, and its numbers are largely increased in winter by migrants from northern latitudes. The winter-visitors do not as a rule become plentiful until December; about April they take their departure for colder regions.

The Tufted Duck is, on the whole, fonder of fresh than of salt water. It is not commonly met with on the open sea, though limited numbers frequent bays and estuaries. I have generally seen this Duck in small parties of from five to twenty birds, never in great flocks like Wigeon or Scaup.

The adult male is easily identified when swimming unsuspectingly on a lake, by his white flanks and black upper plumage. By creeping cautiously to the water's edge and

then crouching low, or better still, lying flat on one's chest, several groups of these birds may be observed scattered on the water. Some are perhaps asleep, their heads turned round on their backs, the dumpy little creatures resembling balls of black and white, but the majority will probably be feeding, every now and then disappearing under the surface. Should one wait a little time longer in silence the birds will, in all likelihood, approach closer to the water's brink. Now, even without a field-glass, the adult male with dark glossy back and neck, crested head, white flanks and bright yellow eyes, can readily be detected.

When suspicious of danger, it swims so low in the water that its white sides cannot be seen. On salt-water inlets it might be mistaken in the distance for a Scoter, from which, however, it may be distinguished by its smaller size, and by the fact that unlike the Scoter it never assembles in immense flocks; moreover, the Scoter, being exclusively marine in its habits, is often found weathering the gale far out at sea.

At times the Tufted Duck will associate with other species, especially about the mouths of large rivers, where food and consequently bird-life is abundant. I have seen small parties in company with Golden-eyes at the estuary of the River Liffey, Dublin, the birds quietly floating down the tide in single file. Prior to the spring-migration, I have noticed Tufted Ducks on the water in company with many other species, frequently with Mergansers.

Food.—This Duck seeks its food chiefly in the morning and evening; it may be seen sleeping during the day¹ on ornamental waters. Descending to a considerable depth in quest of food—shell-fish, aquatic insects, and vegetables—it has been taken in nets lying fifteen fathoms deep on Lough Neagh (Ussher).

Voice.—The voice is guttural in character, the call-note sounding like *curragh-curragh-curragh* (Whitaker).

Nest.—The Tufted Duck breeds on the ground and generally near water, concealing its nest in grass-tufts and other available herbage. Mr. Ussher states that he has "seen nine nests, each in the centre of a large clump of rushes on a high grassy peninsula, with cattle, sheep, and horses, grazing between the nests." The eggs, eight to

¹ A habit also common to the Pochard and Golden-eye.

thirteen in number, are greenish-yellow. Incubation commences about the end of May.

The Tufted Duck breeds in several English counties, among which may be mentioned :—Nottinghamshire, Yorkshire, Lancashire, Northumberland, Norfolk, Sussex, Hampshire and Dorset. In Scotland it has increased markedly of late years as a breeding-species, the individual nesting districts being far too numerous to mention (Harvie-Brown, Ann. Scot. Nat. Hist., 1896, and Proc. Roy. Phys. Soc. Edin., 1895).

It now breeds in several localities in Ireland, though formerly in the time of Thompson (1849), it was but a winter visitor. According to Mr. Ussher's investigation since 1890, the bird has in all likelihood bred in the following counties :—Kerry, Cork, Clare, Tipperary, Westmeath, Longford, Roscommon, Sligo, Leitrim, Fermanagh, Monaghan, Armagh, Antrim, and Londonderry. In some localities the breeding-birds have noticeably increased.

The Tufted Duck is easily tamed and breeds in captivity ; hybrids with the Ferruginous Duck and the Pochard have been raised.

Geographical distribution.—Abroad, it breeds in the Northern but Sub-arctic regions of Europe and Asia, migrating in winter over the rest of these Continents, until India, China, and Japan are reached. Wanderers extend their journeys even to the neighbouring islands in the North Pacific Ocean. On the African side the bird reaches Abyssinia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, with its crest of thin wavy feathers, neck and upper breast, glossy-black, reflecting shades of purple and green ; back, scapulars, wing-coverts, and under tail-coverts, duller black ; wing speculum, white with a black border ; primaries and tail, blackish-brown ; lower breast and abdomen, white ; flanks, shaded with greyish-white.

Adult male, post-nuptial or eclipse.—Resembles the female plumage, but the brown is much darker, almost black, and the flanks are streaked with black.

Adult female nuptial.—The black parts are replaced by dark brown, and the breast and abdomen are shaded from dirty white to brownish-grey.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female plumage, but the brown on the front of the head is finely spotted with white:

BEAK. Slate-grey with a black tip.

FEET. Dull slate-grey; webs nearly black.

IRIDES. Bright golden-yellow.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	17.25	in.
WING	...	...	...	8	„
BEAK	...	...	...	1.75	„
TARSO-METATARSUS	...	...	...	1	„
EGG	...	...	...	2.3 × 1.5	in.

SCAUP-DUCK.¹ *Fuligula marila* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 24; Dresser, 'Birds of Europe,' vol. vi, pl. 436; Lilford, 'Coloured Figures,' vol. vii, pl. 46.

The presence of the Scaup-Duck is a feature of bird-life on the coast; it is essentially marine in its habits, and even when, under exceptional circumstances, it is met with on fresh water, the locality is usually adjacent to the sea. This Duck is a common winter-visitor to our Isles, arriving about October and departing in March or April. After the main body of migrants has arrived, Scaups do not apparently become more plentiful with the onset of severe weather, as inland lakes, not being frequented, cannot, when frost-bound, reinforce the numbers of those birds on tidal waters. The Scaup is not a wary bird. I have passed, when sailing on the open sea, within sixty yards of large flocks. During heavy gales, shallow creeks and salt-water channels are often thickly studded with these Ducks. In the severe

¹ A Duck "so-called because she feeds upon *Scaup*, *i.e.*, broken shel-fish," as may be seen in Willughby's *Ornithology* (p. 365); but it would be more proper to say that the name comes from the "Mussel-scaups" or "Mussel-scalps," the beds of rock or sand on which mussels (*Mytilus edulis*, and other species) are aggregated" (Newton).

weather of January, 1881, Mr. W. J. Williams observed several Scaup-Ducks some miles from the mouth of the river Liffey, Dublin, and the birds did not seem to be disturbed by the din of the city traffic. They were so tame that Mr. Williams was able to procure a specimen¹ with a catapult, the projectile being a large grain of shot. Sir R. Payne-Gallwey remarks that this species is not heedful of loud noises at sea, such as the fog-bell.

At ebb-tide, Scaup-Ducks will rest for many hours on the sand-bars of low-lying coasts, unless they be repeatedly disturbed. When a large number of these birds are approached and they become suspicious of danger, they begin to divide into smaller companies, which radiate from one another in all directions. The habit is very characteristic of Sea-Ducks.

When the danger is past, the birds come together again and form a great and densely-crowded mass; these, in turn, are often joined by other flocks, so that after a little time all the Scaup-Ducks in the immediate neighbourhood may occupy a patch on the sea several acres in extent.

Flight.—This species is slow in taking flight, and being heavy in build, it usually flutters along the surface of the water before rising on the wing.

When swimming it may be distinguished by its white sides and grey back.

Voice.—The note is hoarse and unmusical, and resembles the syllables *scaup-scaup-scaup*, often repeated.

Food.—The Scaup is an expert diver, feeding from the floor of the sea on crabs, shell-fish and seaweeds.

Nest.—It generally breeds near fresh water, in some cases on islands in lakes. The nest, formed chiefly of dry grass and weeds, is as a rule situated in coarse herbage, or among loose stones. The eggs, six to eleven in number, are greenish-buff or greenish-grey.

Several assertions regarding the nesting in Scotland have not been proved; however, in June, 1902, Mr. Harvie-Brown received and identified a nestling Scaup, ten days old, taken from one of the Outer Hebrides south of the Sound of Harris (Ann. Scot. Nat. Hist., 1902-3).

Geographical distribution.—Abroad, this Duck breeds in the Arctic and Sub-arctic regions of Europe, including

¹ This specimen, which is preserved in the collection of Mr. Williams, was killed on January 19th, 1881, opposite the Four Courts, Dublin.

Iceland, Asia, and America. On its winter passage it reaches the seas and some of the larger sheets of fresh water in Central and Southern Europe. Eastward its migrations extend to China and Japan, while along the Atlantic sea-board it is to be found as far south as Central America.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, neck, upper breast, and back, glossy-black, reflecting shades of green and purple; rest of back, scapulars, and most of the wing-coverts, finely pencilled with black and white; 'speculum' white, bordered with greenish-black; primaries, brown; lower breast and abdomen, white; tail, brown with darker coverts.

Adult male, post-nuptial or eclipse.—Closely resembles the adult female plumage.

Adult female nuptial.—Head very dark brown, with a noticeable white patch at the base of the beak; neck, upper breast, and back, brown; rest of back, dusky-brown, finely pencilled with grey; the flanks and under tail-coverts of rather similar markings; abdomen, dull greyish-white.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female plumage.

BEAK. Bright slate-blue, tipped black.

FEET. Bluish-grey.

IRIDES. Bright golden-yellow.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	19	in.
WING	...	...	...	8.5	"
BEAK	...	...	...	1.75	"
TARSO-METATARSUS	...	...	...	1.5	"
EGG	...	...	...	2.6 × 1.75	in.

Allied Species and Representative Forms.—*F. affinis* is the Lesser Scaup, a smaller American form. But the bird figured as such in the earlier editions of Yarrell appears to be a hybrid between the Scaup and Pochard (Saunders).

GOLDEN-EYE. *Clangula glaucion* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 31; Dresser, 'Birds of Europe,' vol. vi, pl. 440; Lilford, 'Coloured Figures,' vol. vii, pl. 48; Booth, 'Rough Notes,' vol. iii, pl. 13.

As a winter-migrant the Golden-eye is tolerably plentiful, and may be met with round our coasts between October and April. It inhabits river, lake, and tide, delighting in the smooth waters of sheltered bays and estuaries. It is a somewhat difficult Duck to approach, but with the aid of

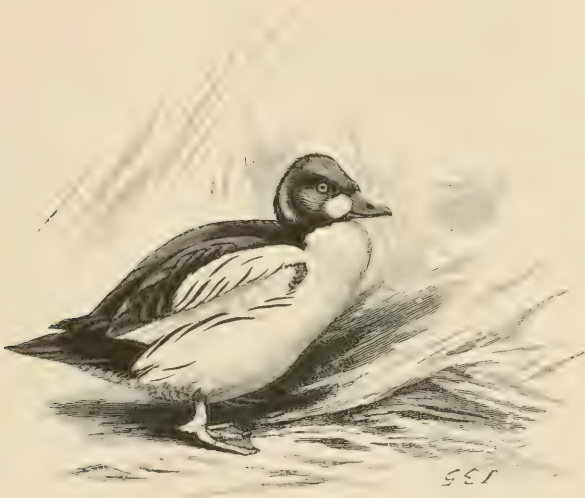


FIG. 17.—GOLDEN-EYE.

a field-glass, can be distinguished by a white patch in front of the eye, very conspicuous in the adult male, while its bright eye of golden-yellow can be discerned some little distance off.

The Golden-eye may be watched from the shore of a small lake, but being very wary can be observed to the best advantage only from the ambush of a large rock or other available cover. Like the Tufted Duck, it appears on the water as a short, thickset bird, and from its black and white plumage has also been named by sportsmen the

‘Magpie Diver.’ Small flocks annually visit Dublin Bay and the neighbouring inlets, and although I have watched these birds for several years in succession, I have discovered but few adult males among them. Many sportsmen are not aware of the fact that the female differs considerably in plumage from the male, indeed the former as well as the immature birds of both sexes are known by many as ‘Morillons.’

The Golden-eye is somewhat restless in disposition and may be seen frequently changing its quarters from lake to tide, especially in windy weather. This to-and-fro-movement, very noticeable in some districts, does not subserve the same purpose as the ‘flighting’ of Surface-feeding Ducks (such as the Wigeon), which leave the sea and fly regularly to a particular feeding-bank.

Flight.—This Duck is wonderfully quick in taking wing. It can shoot through the water into the air¹ with almost the rapidity of a flying-fish, and, when on the wing, its short, stiff plumes, vibrating rapidly, make a rattling or whistling sound quite audible at a fair distance off. Hence the local names of ‘Rattle-wing’ or ‘Whistler.’ Equally quick is it at diving to avoid danger. If suddenly alarmed it disappears under the water in a twinkling, not waiting to sink itself deeply on the surface to avoid observation, prior to diving, as the Tufted Duck is seen to do.

Food.—Food is procured by diving, and chiefly during the daytime; crabs, shell-fish and seaweeds are largely eaten.

Voice.—The note is harsh and croaking and may be syllabled *curr-curr-curr*.

Nest.—The Golden-eye nests in holes in trees, and in this respect differs from most species of Ducks. However, in districts where trees are not available it is known to build in holes in the ground.

The nest is lined with down. The eggs, ten to twelve in number, are pale greenish-blue with the green shade decidedly predominating, but this fades to a considerable extent after the eggs are blown.

In a state of nature this Duck has bred with several species, including the Merganser and Smew.

¹ Other species of Diving Ducks when put to flight are usually seen to hesitate for a few seconds on reaching the surface of the water, to regain their breath before taking wing.

It is easily tamed and the adult male in full plumage is strikingly ornamental on aquatic preserves.

Geographical distribution.—This bird breeds in great numbers in Northern Europe and Asia, but only very sparingly beyond the forest growth. In Russia, it nests as far south as lat. 58° N. On migration it visits the seas and inland waters of Central and Southern Europe and Asia, while wanderers occasionally reach N. Africa.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head and upper neck, glossy-black, reflecting shades of dark green; feathers on the top of the head form a short, thick crest; below and in front of the eye is a noticeable white patch; rest of neck, wing-coverts, breast, abdomen, and under tail-coverts, white; flanks, brownish-grey; back and upper tail-coverts, black; primaries, dark brown; scapulars, black interspersed with white; tail brownish-black.

Adult male, post-nuptial or eclipse.—Resembles the female dress, but the white patch at the base of the beak does not altogether disappear, and much of the white on the wings is retained.

Adult female nuptial.—Head and upper neck, dark nut-brown; below this is a pale whitish-brown collar; rest of neck and upper breast, greyish-brown; back and sides, dark brown shading to dusky greyish-black; much of the white on the wing-coverts in the male is replaced by dark brown shading to black; lower breast and abdomen, white.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female plumage.

BEAK. Dull bluish-black.

FEET. Yellow; webs, blackish.

IRIDES. Bright golden-yellow.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	18·5	in.
WING	...	...	...	8·25	„
BEAK	...	...	...	1·4	„
TARSO-METATARSUS	...	...	...	1·5	„
EGG	...	...	...	2·4	× 1·6 in.

Allied Species and Representative Forms.—*C. islandica* (Barrow's Golden-eye), a larger bird, the male of which has a more fully-developed crest and more purple shading on the head, is the representative in Iceland and Greenland, while a larger form with no difference in plumage from our bird, inhabits North America (Saunders).

BUFFEL-HEADED DUCK. *Clangula albeola* (Linnæus).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. vi, pl. 439 ; Lilford, 'Coloured Figures,' vol. vii, pl. 49.

This beautiful little bird, smaller than the Golden-eye, but somewhat similar to it in markings, is an inhabitant of the New World. There are but four substantiated records of its occurrence in Britain, the specimens secured being all males. One was obtained in the winter of 1830 at Yarmouth ; it is preserved in the Norwich Museum (Lubbock, 'Fauna of Norfolk') ; another in January, 1865, from the Loch of Loriston, Aberdeenshire ; a third "many years ago" from the Loch of Strathbeg ; this specimen is preserved in the Banff Museum (Gray, 'Birds of West Scotland'). The fourth was taken in the winter of 1864-1865, at Bridlington, Yorkshire, and is now in the collection of Mr. Whitaker, of Rainworth.

As yet no examples have been recorded from Ireland.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head and throat, glossy purplish-black ; forehead and back of neck, metallic greenish-black ; a large white patch behind¹ the eye extends to the back of the head and forms a crest ; a white collar round the lower neck, becomes continuous with the white of the breast and abdomen ; back and inner secondaries, black ; scapulars, outer secondaries, and wing-coverts, white, the last interspersed with black ; tail, grey ; coverts, darker.

¹ In the Golden-eye, this white patch is situated in front of the eye.

Adult male, post-nuptial or eclipse.—"Eclipse male resembles a faded female, but much paler on the scapulars; assumed about middle of August." (Described by Mr. F. Coburn, from a specimen in his collection.)

Adult female nuptial.—Head, neck, and back, brown; sides of abdomen, tinged with greyish-brown.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female plumage.

BEAK. Bluish.

FEET. Yellowish-pink.

IRIDES. Dark brown.

EGGS. White, tinged with green: clutch, ten.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	15	in
WING	...	...	...	6.5	„
BEAK	...	...	...	1	„
TARSO-METATARSUS	...	...	...	1	„
EGG	...	...	...	2 × 1.5	in.

LONG-TAILED DUCK. *Harelda glacialis* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 33; Dresser, 'Birds of Europe,' vol. vi, pls. 443, 444; Lilford, 'Coloured Figures,' vol. vii, pl. 50.

Around the coasts of Scotland and the north-west of Ireland, small gatherings of Long-tailed Ducks, active and sprightly-looking, may be seen at times riding on the rough waves of the winter-sea, their lively gambols and clamorous voices telling us that they are in the zenith of enjoyment in their maritime home.

Before October, few appear on our coasts, and most of the birds depart in April. Along the southern and south-western sea-board of England and Ireland this species is somewhat uncommon; proceeding northward it becomes more plentiful, large numbers visiting several of the Scottish Islands.

Immature birds¹ are more often met with than adults; the former are harder to distinguish than the old males, which are strikingly handsome.

This species is gregarious, though it seldom collects into very large flocks. In the year 1856, Mr. Warren observed fifty birds together (nearly all males), feeding outside the Moy estuary, co. Mayo.

This Duck delights in the open sea, and is driven only by stress of weather to take refuge in bays and shallows. It is seldom met with away from the tide, but Mr. Ussher mentions several interesting instances from inland lakes, also one from Portadown on the River Bann, and another from a small pond at Rathfarnham near Dublin ('Birds of Ireland').

Voice.—Long-tailed Ducks attract attention by their loud gabbling cry (unlike the hoarse croak of most Diving Ducks), which may be syllabled *cal-lōō-ōō-cal-lōō-ōō*. In Scotland this cry has been translated into *coal-an-can-le-licht*.

Food.—Being an expert diver, this Duck frequents deep waters studded with rocks, from which periwinkles and other shell-fish can be picked at a depth of three or four fathoms. Seaweeds and worms also form part of the diet.

Nest.—The nest, composed of broken stems of withered grass, with a warm lining of down, is built on the ground and generally concealed in some sort of rough herbage, such as a grass-tuft or in scrub; or it may be placed at the foot of a low bush, but always close to a river, lake, or pond. The eggs, ten to twelve or more in number, are greenish-white with a tinge of buff (Yarrell). In the breeding-season this Duck is sociable, and many nests may be discovered within the confines of a small area.

Except occasionally in the Shetlands (Buckley and Evans, 'Fauna of the Shetlands,' 1899), and perhaps in the Orkneys, there is no evidence of the Long-tailed Duck breeding in the British Isles.

Geographical distribution.—This species nests numerously within the Arctic circle in Europe, Asia, and America, its breeding-range being practically circumpolar. It breeds more sparingly in Sub-arctic latitudes.

On its southern migration, it visits the seas and large sheets of fresh water of the European, Asiatic and North

¹ Several examples of immature Long-tailed Ducks have been shot on the Dublin coast; I have collected three from that locality.



Fig. 1.
LONG-TAILED DUCK (Male).



Fig. 2.
EIDER DUCK (Male).
Specimens mounted by the late Mr. E. Williams.

American Continents, extending to Japan in the East, and the United States in the West.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head and neck, pure white; cheeks, delicate light grey, below each of which is a dusky brown patch extending to the side of the neck; entire back, blackish; scapulars white, most of them elongated, pointed, and drooping; inner secondaries, white; breast, wing-coverts, and primaries, brownish-black; abdomen and flanks, pure white; long central tail-feathers, black; outer and shorter ones, white.

Adult male, post-nuptial or eclipse.—This plumage is assumed about the end of May. The beautiful white of the head and neck is replaced to a great extent by dark brown, but the cheeks retain a light buff and a very impure shading of white; the back is brownish and the scapulars and inner secondaries are black with reddish-brown edges.

Adult female nuptial.—Top of head, back, and wings, brown; neck and stripe at the back of the eye, white; cheeks, throat, and upper breast, light brown; abdomen, white; central tail-feathers short.

Adult winter, male and female.—Similar to the respective nuptial plumages, though the male usually exhibits more white about the head.

Immature, male and female.—Closely resembles the female plumage.

BEAK. Base and tip, black, middle portion of upper segment, rose-colour.

FEET. Dull slate-colour; webs, dusky.

IRIDES. Reddish.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	22 to 26 in., including the long central tail-feathers. ¹
WING ... ..	...	8·8 in.
BEAK ... ..	...	1 "
TARSO-METATARSUS	...	1·25 "
EGG ... ..	...	2·1 × by 1·45 in.

¹ I have found that the long central tail-feathers, in a fully-matured male, average 8·5 inches in length.

HARLEQUIN¹ DUCK. *Cosmonetta histrionica* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 32; Dresser, 'Birds of Europe,' vol. vi, pl. 442; Lilford, 'Coloured Figures,' vol. vii, pl. 51.

Though abundant and resident in Iceland (Coburn, 'Zoologist,' 1901), this handsome Duck is very rare as a British bird. Specimens have been procured from Scotland (J. Sowerby 'British Miscellany,' 1806); one from Filey on the Yorkshire coast in the autumn of 1862, which is preserved in the collection of Mr. Whitaker, of Rainworth; two from the Northumberland coast on December 2nd, 1886, now in the collections of Mr. R. W. Chase and Rev. Julian Tuck (Saunders).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head, throat, and neck, bluish-black; partially encircling the neck are two white collars, the upper margined with a thin band of black; in front of the eye is a large patch of white, behind the eye a smaller one and running down the back of the neck is a white stripe; on top of the head there is a black band, margined on either side with white and chestnut which extend from the front to the back of the head; back and upper tail-coverts, bluish-black; scapulars, wing-coverts, and secondaries, patched with white and purple; primaries and tail, brownish; breast and abdomen, brownish-grey; flanks, reddish-brown; on either side of the tail there is a small white spot.

Adult male, post-nuptial or eclipse.—"Eclipse male resembles female, but much darker in general plumage; mantle, flanks, and under parts being slaty-black; assumed about the end of July or early in August." (Described by Mr. F. Coburn, from a specimen in his collection.)

Adult female nuptial.—Rather sombre-plumed; back and neck, brownish; breast and front of neck, mottled brownish-white; abdomen, impure white; there is a large

¹ The appropriate name of 'Harlequin' has been given to this species on account of the well-marked patches, stripes, and incomplete rings of white, which stand out in bold relief against the dark ground-shades of the cheeks and neck.

patch of white in front of the eye, and a smaller one behind it.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female plumage, but “more rusty-looking” (Coburn).

BEAK. Bluish-black.

FEET. Lead-colour.

IRIDES. Orange-red.

EGG. Cream-colour : clutch, seven.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	17	in.
WING	...	...	...	8	„
BEAK	...	...	...	1·25	„
TARSO-METATARSUS	...	...	...	1·3	„
EGG	...	...	...	2·2 × 1·7	in.

EIDER DUCK. *Somateria mollissima* (Linnæus).

Coloured Figures.—Gould, ‘Birds of Great Britain,’ vol. v, pl. 26; Dresser, ‘Birds of Europe,’ vol. vi, pl. 445; Lilford, ‘Coloured Figures,’ vol. vii, pl. 52; Booth, ‘Rough Notes,’ vol. iii, pls. 8, 9, 10.

The Eider Duck is an uncommon winter-visitor to the British Isles. However, along the north-eastern coast of England, and in certain districts in Scotland, where it is partially resident, it occurs in considerable numbers. On the Irish sea-board it is only a rare and an uncertain migrant in winter.

In its habits no Duck is more thoroughly maritime. Storm seldom dislodges it from its home on the deep, and even during the most dismal tempest, parties of Eiders may be seen, far out at sea, actively swimming and diving through the great rolling billows. Except in the nesting-season the Eider is seldom found on inland waters. Mr. Ussher, in ‘The Birds of Ireland,’ records two instances of its occurrence on Lough Neagh. This bird is not difficult to recognise on the open sea. Its superior size distinguishes

it from other Ducks, while its habits of diving exclude the possibility of its being mistaken at a distance for any of the Wild Geese.

Food.—Eider Ducks are constantly plunging under water; they descend to a great depth and remain beneath the surface for a considerable time, snatching mussels (their staple diet) from off the rocks. They also eat crabs, crayfish, and a small quantity of seaweed.

The flesh, rank and fishy, is eaten by the Greenlanders.

Voice.—The voice is low and murmuring, resembling the syllable *curr*, softly produced; as a rule, the bird keeps silent unless alarmed.

Flight.—The Eider Duck can travel at a considerable speed on the wing, still the flight is heavy and not buoyant.

Nest.—Though this bird builds on the ground, its nest may be found on cliffs, hundreds of feet above the sea-level. But the more usual site selected is a low, flat-topped island, fairly clad with marine vegetation, in clumps of which the nest may be placed. Sometimes a crevice between rocks or loose stones is utilised. The materials are dry grass and seaweeds, to these, which form the foundation, bits of heather, stems, and campion, are sometimes added. The nest is thickly lined with grey down, the well known *Eider-down* of commerce; as incubation proceeds the mother-bird continues to add more down to the nest.¹

Incubation begins about the end of May and lasts for twenty-eight days. During all that time it seems evident that the hatching-bird abstains from food, a fact which has been vouched for by observations made on birds in captivity (Payne-Gallwey, 'Letters to Young Shooters,' Third Series, p. 173).

The eggs, five to eight in number, are usually of a light olive colour, but the shade varies even in the same clutch.

The sitting-bird is often remarkably tame (especially in countries where the Eider Duck is protected by law), and

¹ It may be mentioned that the down which is so characteristic a feature of the lining of Ducks' nests, is plucked by the mother-bird from her own breast. The down of aquatic birds is remarkably light and soft, and retains among the interstices of its fibres, the heat given out from any body with which it is in contact. The softness, lightness, and elasticity of *Eider-down*, with its wonderful heat-retaining properties, renders it a highly-prized material for coverlets.

will even suffer herself to be stroked with the fingers. However, when put off her nest, she squirts a foul-smelling liquid over her eggs, as sitting-ducks are wont to do. The Drakes keep apart in small assemblies while their mates are hatching.

In districts where this species is plentiful, the nests are often in such close proximity that the birds may be said to breed in colonies.

The only breeding-haunts which are known to exist in England, are off the coast of Northumberland, where on the Farne Islands quite a large number of birds nest. Coquet Island appears to be the most southern breeding-station (Harting, 'Handbook of British Birds,' p. 260). Along both sides of the Scottish sea-board, including the Orkneys, Shetlands, Inner and Outer Hebrides, and other islands along the western side, the Eider Duck occurs as a nesting-species. Strange to say, though it breeds and is seen in large flocks on Islay, it occurs only as a rare winter-visitor to the Irish coast, even to Rathlin Island, separated from its breeding-haunts by less than twenty miles of water (Ussher). In Scotland it is increasing as a nesting-species (Harvie Brown).

Geographical distribution.—Abroad, this species nests abundantly in Iceland, the Faroes, and Norway, in which countries it is strictly preserved; it also breeds in the Arctic regions of Europe and Western Asia. When migrating in winter, it visits the coasts and seas of Europe, only small numbers wandering as far south as the Mediterranean.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top and front of head, black, this colour being prolonged in the form of a point of feathers along the middle line of the beak half way to the nostrils; a white median line interrupts the black on the top of the head; back of upper neck, pale sea-green; hind part of cheeks, same colour, these two green patches being separated by a whitish line; rest of cheeks, throat, upper neck, back, scapulars, and wing-coverts, white; primaries and outer secondaries, brownish-black, and crossed by the long curved drooping inner secondaries; these feathers are of a yellowish-white tinge; lower neck and breast, warm rosy-buff; abdomen, upper and under tail-coverts, black; tail, brownish-black; flanks behind the legs, patched with white.

Adult male, post-nuptial or eclipse.—The back and scapulars are chequered with blackish-brown, much darker than in the female.

Adult female nuptial.—The plumage of the female is chiefly light reddish-brown, chequered and barred with black; the shades of the head and neck are lighter than those of the breast and abdomen.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles closely the female plumage.

BEAK. Greenish.

FEET. Dull greenish-brown.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	23	in.
WING	...	...	...	11	„
BEAK	...	...	...	2.25	„
TARSO-METATARSUS	...	...	...	1.75	„
EGG	...	...	...	3 × 2	in.

Allied Species and Representative Forms.—*Somateria v-nigrum*, a larger species, and differing in that the male has a black mark under the chin, inhabits Behring Sea.

S. mollissima borealis inhabits Greenland and districts to the west in Arctic America.

S. dresseri, with “the bare space near the base of the bill rounded rather than triangular, and the sides of the crown greener,” inhabits Southern Labrador, extending to the Delaware in winter (Saunders).

KING-EIDER. *Somateria spectabilis* (Linnæus).

Coloured Figures.—Gould, ‘Birds of Great Britain,’ vol. v, pl. 27; Dresser, ‘Birds of Europe,’ vol. vi, pl. 446; Lilford, ‘Coloured Figures,’ vol. vii, pl. 53.

This Arctic Duck is a rare visitant to British seas, more especially along the south coast. It has been obtained on a

few occasions in Norfolk, a bird taken at Breydon Harbour on July 25th, 1813, being probably the earliest British specimen recorded (Yarrell, 'British Birds'). The following counties have also yielded specimens :—Northumberland (Farne Islands), Durham, Yorkshire, Essex and Suffolk. A female bird, purchased in Leadenhall Market, is now in the possession of Mr. J. H. Gurney.

In Scotland, a few examples have been obtained from the coasts of Haddingtonshire, and from the Firths of Forth and Tay ; there are several records also from the Orkneys and Shetlands. Recently, viz., February 25th, 1899, a male was taken at Lerwick, one of the last-named group of islands (Harting, 'Handbook of British Birds,' 1901, p. 466).

In Ireland the King-Eider is exceedingly rare ; it has been procured on three or four occasions, and only once from the west coast. Its occurrences are as follows :—A female obtained in Kingstown Harbour (Dublin), about October 1st, 1837 (Thompson) ; another female obtained in Belfast Lough on March 11th, 1850, now preserved in the Belfast Museum (Thompson) ; a third female procured in Rathlin Island, in November, 1861, as recorded by the late Robert Gage in his list of Rathlin Birds made in 1889 (Ussher).

The fourth specimen, which proved to be an immature male, was shot on Achill Island, co. Mayo, on December 12th, 1892, and is now in the collection of Mr. Edwin Bayles, in Birmingham (J. R. Sheridan, 'Irish Naturalist,' 1893, p. 177).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head and nape of neck, bluish-grey ; neck, yellowish, except the front which is white ; cheeks, light green and white ; under the chin is a black patch ; upper region of the back, whitish ; wings, black, except a large white patch on the coverts ; inner secondaries, long and curving down over the primaries ; lower region of the back, scapulars, and upper tail-coverts, black ; tail, dark brown ; upper breast, rich buff ; lower breast and abdomen, black ; flanks, patched with white.

Adult male, post-nuptial or eclipse.—Somewhat resembles the female plumage, but the shades are darker, and the throat is marked with traces of black ; there is very little white on the wings.

Adult female nuptial.—General shade of plumage brown; feathers of the head and neck being of a lighter shade. The female of this species and that of the Common Eider are very much alike in colour; in the former, however, the central line of feathers on the upper segment of the beak runs down to the level of the nostrils; in the Common Eider this line hardly reaches a point mid-way between the base of the beak and the nostrils.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female in plumage.

BEAK. Orange-red; 'basal tubercle' same colour, margined with black.

FEET. Orange-red; webs darker.

IRIDES. Brown.

EGGS. Green, shading to greenish-grey: clutch, four to six.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	22	in.
WING	...	...	...	10.5	„
BEAK	...	...	...	1.25	„
TARSO-METATARSUS	...	...	...	2	„
EGG	...	...	...	2.5	× 1.8 in.

STELLER'S EIDER. *Somateria stelleri* (Pallas).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 25; Dresser, 'Birds of Europe,' vol. vi, pl. 447; Lilford, 'Coloured Figures,' vol. vii, pl. 54.

This, the least of the three Eider Ducks in size, is an exceedingly rare wanderer from the Arctic seas. It has been twice recorded from England. A male was killed on February 10th, 1830, near Caistor, in Norfolk. It is now in the Norwich Museum (A. Patterson, 'Zoologist,' 1900, p. 532). The second specimen was obtained from Filey Brigg, Yorkshire, on August 15th, 1845, by the late Mr. G. N. Curson. It is in the collection of Lord Scarsdale, at Kedleston (Yarrell).

DESCRIPTIVE CHARACTERS.

Adult male nuptial.—Head and upper neck, glossy-white, with two green patches, one on the back of the head, another, smaller, in front of the eye; chin, black; a purplish-black neck-collar is continuous with a band of the same colour, which extends along the middle of the back; wing-coverts, chiefly white; speculum, dark glossy-blue margined below with white, inner secondaries and scapulars, long, pointed, and decurved, edged white and blue; primaries, brown; tail, brown; breast and abdomen, rich reddish-brown; under tail-coverts, dark brown.

Adult male, post-nuptial or eclipse.—An eclipse plumage, having a resemblance to that of the female, or of the miniature male, is probably assumed in early autumn.

Adult female nuptial.—Dark brown, mottled with reddish-buff about the neck and breast; speculum, bluish-black, bordered above and below with narrow white bands.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female in plumage.

BEAK. Dark grey.

FEET. Greyish-black.

IRIDES. Pale brown; lids surrounded by a black rim.

EGGS. Greenish-grey: clutch, seven to nine.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	18	in.
WING	...	...	...	8·5	„
BEAK	...	...	...	1·5	„
TARSO-METATARSUS	...	...	...	1·5	„
EGG	...	...	...	2·2	× 1·6 in.

COMMON SCOTER. (*Edemia nigra* (Linnaeus)).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 28; Dresser, 'Birds of Europe,' vol. vi, pl. 449; Lilford, 'Coloured Figures,' vol. vii, pl. 55; Booth, 'Rough Notes,' vol. iii, pl. 11.

Thousands of Scoters journey southward from their breeding-haunts in autumn and early winter, and, collecting

into vast assemblages around our coasts, darken the waters for miles around. Off the east side of England this Duck is so abundant that its numbers, thickly scattered over the open sea, appear almost countless. In spring, about April, Scoters leave our seas for more northern latitudes, though a few immature birds remain along our coasts throughout the summer. In Dublin Bay I have seen Scoters and Shags together on the water, and the manner in which the two species descend offers an interesting contrast. The Shag, slightly raising itself out of the water, takes a distinct 'header'; the Scoter disappears without warning or splash, as though it were suddenly gripped from beneath and pulled under water. Scoters dive rather obliquely, and travelling under the surface, generally reappear some distance from where they first descend. They are fast swimmers, and may be seen, especially in the early spring, cruising on the water with their heads and necks stretched out, after the fashion of Shovelers. Scoters, like other Diving Ducks, constantly raise themselves upright on the water and flap their wings, thereby arranging their feathers and dislodging drops of water which have remained among them after diving. In a vast company of these birds it is most entertaining to watch several of them suddenly rising up and flapping like so many 'Jack-in-the-Boxes.' Unlike most Diving Ducks, the Scoter floats comparatively high on the water, at times cresting the rough billows with considerable buoyancy. It seldom leaves the open sea even in rough weather, but after a furious gale it is occasionally found near land, dead, or in an exhausted condition. Lord Ventry has picked up near Inch Point, co. Kerry, "water-soaked and storm-driven Scoters scarcely able to breathe" (Payne-Gallwey, 'Fowler in Ireland,' p. 110).

Watters mentions that "on two occasions this Scoter has been shot whilst apparently searching for food along the bottom of wet ditches and open drains" ('Birds of Ireland,' p. 213). A few instances of the occurrence of this species away from the tide have been recorded, viz., in Wiltshire (twenty miles inland), Oxford, and Windermere. It has also visited several Irish rivers, as the Liffey, Suir, Shannon, and Blackwater, also Lough Neagh.

Food.—The Scoter subsists mainly on shell-fish, often obtained at a depth of several fathoms.

In countries where this bird is eaten, numbers are caught



COMMON SCOTER (Male).

in nets, spread over 'mussel-beds.' The Ducks dive for shell-fish, and, becoming entangled in the meshes of the nets, are drowned.

Voice.—The voice of the male in the nesting-season resembles the sound *tu-tu-tu-tu*, the female answering *re-re-re-re* (Saunders).

Flight.—The flight is fast, but not buoyant.

Nest.—The Scoter builds on the ground, amid coarse herbage, such as heather, and usually in the vicinity of fresh water: an island in a lake is a favourite situation. The nest is composed chiefly of dry grass and is lined with grey down.

The eggs, six to nine in number, are creamy-white in colour. Incubation begins in June.

With the exception of a small number of birds which remain to breed in Caithness, Sutherland, Ross, and Inverness-shire, as well as in Tiree (where this Duck bred in 1897), we had no further evidence that it nested elsewhere in the British Isles until 1904, when in June and July of that year Major Herbert Trevelyan observed a pair of Scoters on one of the larger loughs in Ireland. On June 13th, 1905, the same observer found a female Scoter on her nest, under a small bush on an island. The nest contained eight eggs. On July 1st the female bird, and a brood of five young, were observed swimming on the lough. The nest, eggs, and young, were identified beyond a doubt by Dr. Bowdler Sharpe and Mr. Heatley Noble ('Field,' July 15th, 1904; also Ussher, 'Irish Naturalist,' 1905, p. 199).

Geographical distribution.—Abroad, the Scoter breeds in Northern Europe and Western Siberia, migrating in winter over the seas of the European Continent, travelling as far as the coast of North Africa, and extending along the Mediterranean to the coast of Palestine. Limited numbers appear on the large inland waters of Europe.

DESCRIPTIVE CHARACTERS.

PLUMAGE. Adult male nuptial.—Entire plumage, glossy-black, the breast and abdomen being duller than the back and wings.

Adult male, post-nuptial or eclipse.—It is generally supposed that the adult male retains the black plumage throughout the summer, though some approach to the

female garb may possibly be assumed for a short period, as in the case of the Velvet-Scoter.

Adult female nuptial.—Chiefly dark brown; wing-coverts, lighter; sides of the neck and cheeks, greyish-white; chin, impure white.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Cheeks, chin, sides and front of neck, breast, and abdomen, dull greyish-white; lower part of the abdomen, mottled with white and brown.

BEAK. Black, with the 'basal protuberance' marked in the middle line by a narrow band of orange-yellow, which, widening out, extends nearly to the tip. In the female the 'basal protuberance' and orange band are absent.

FEET. Deep brownish-black.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH ...	...	...	20	in.
WING ...	...	...	9	„
BEAK ...	...	...	1·9	„
TARSO-METATARSUS ...	...	...	1·25	„
EGG ...	...	...	2·5 × 1·8	in.

Allied Species and Representative Forms.—*E. americana*, with a completely orange-yellow 'basal protuberance,' is the North American representative.

VELVET-SCOTER. (*Edemia fusca* (Linnaeus).)

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 29; Dresser, 'Birds of Europe,' vol. vi, pl. 448; Lilford, 'Coloured Figures,' vol. vii, pl. 56.

This is the largest of the three Scoters which visit British waters. It may readily be distinguished from the former species by the white band on its wings. It cannot be said that the Velvet-Scoter is a plentiful winter-visitor, yet it is not infrequent along the south and east coasts of England and Scotland, as far north as the Orkneys.

Along the western sea-board of Great Britain (including Wales) it is rare.

To Ireland it is an uncommon visitor in winter, occurring chiefly on the north and east coasts, especially on those of Louth and Dublin. It has also been recorded from the following counties:—Kerry, Cork, Wexford, Down, Antrim, Donegal, and Mayo. It appears to be very rarely met with on the west coast.

Like its congeners, it is sea-faring in its habits, and is usually met with some miles from land. It very rarely seeks the sheltered waters of tidal estuaries and salt-water channels, which, after a gale, are often thickly studded with multitudes of other species of Ducks. Occasionally, however, it has been discovered on inland waters. Velvet-Scoters, as a rule, collect into small gatherings, and these may associate with multitudes of Common Scoters.

Food.—This Duck feeds on shell-fish, captured at a considerable depth in the water.

Voice.—The note may be described as a low, croaking grunt.

Flight.—The flight is fast and well-sustained when the bird is migrating, but, like its congeners, this species endeavours to escape observation by diving rather than by taking wing.

Nest.—The Velvet-Scoter breeds on the ground, generally under a bush or among scrub; the site may be at a considerable distance from water. The nest is built chiefly of dry grass, weeds, bits of stem, and dead leaves, and is lined with down.

The eggs, eight to ten in number, are creamy-white. Incubation does not take place until late in June. A few pairs may have bred in the Northern Highlands of Scotland (Saunders), but elsewhere this Duck is unknown as a nesting-species in the British Isles.

Geographical distribution.—Abroad, it breeds in Northern Europe and is common in parts of Scandinavia and Russia, also in Western Siberia. In winter it migrates to the seas of Europe, southward to the Mediterranean and eastward to the Caspian and Black Seas.

DESCRIPTIVE CHARACTERS.

PLUMAGE. Adult male nuptial.—Plumage rich velvety-black, except for a noticeable white bar which runs

obliquely across the middle of the wing, and a small white patch behind and below each eye.

Adult male, post-nuptial or eclipse.—Somewhat resembles the adult female plumage, but darker in shade and interspersed with black feathers.

Adult female nuptial.—Back and wings, dark brown; breast and abdomen, lighter in shade; the white patch extends in front of as well as behind the eye, and the wing-bar is smaller and less distinct than in the male.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female in plumage.

BEAK. Yellow; 'basal protuberance' black, from which a thin dark line is prolonged in an oblique direction above each nostril to the tip; lower margin of the upper segment of the beak, black.

FEET. Orange red; webs, blackish-brown.

IRIDES. Light greyish-white.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	22	in.
WING ... ..	...	...	10·75	„
BEAK ... ..	...	...	1·9	„
TARSO-METATARSUS	...	...	1·25	„
EGG ... ..	...	...	2·75	× 1·9 in.

Allied Species and Representative Forms.—*Æ. carbo* is the true Eastern representative, and *Æ. velvetina*, a smaller bird with a different beak, is the North American form (Saunders).

SURF-SCOTER. *Edemia perspicillata* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 30; Dresser, 'Birds of Europe,' vol. vi, pl. 450; Lilford, 'Coloured Figures,' vol. vii, pl. 57.

The home of the Surf-Scoter is North America, but wanderers have occasionally found their way to our shores, chiefly along the western sea-board. This Duck was first

recorded in Britain in 1838, by Blyth. Subsequently it has been obtained in Dorset, Devon, Cornwall, the Scilly Islands, Lancashire and in Cumberland.

In Scotland its occurrence has been repeatedly made known in the Orkneys, where several specimens have been obtained. In the Shetlands the bird has been identified, though not procured. It appears to have been very seldom met with in the Hebridean Islands, however, one was taken near Stornaway, in the winter of 1865 (Gray, 'Birds of the West of Scotland'). On the mainland a specimen was obtained from the Firth of Forth in the spring of 1852, and another off the coast of Aberdeen in November, 1855 (Harting, 'Handbook of British Birds,' 1901, p. 463-4). The Surf-Scoter is a very rare visitor to Ireland; only six specimens have been procured. The data are as follows:—One, an adult male, from Belfast Bay, co. Down, September 9th, 1846 (Thompson): preserved in the Belfast Museum. Another adult male from Clontarf, Dublin, October, 1880 (Payne-Gallwey, 'Fowler in Ireland,' p. 112). Another, an immature bird (sex doubtful), from Crookhaven Harbour, co. Cork, November 5th, 1888 (Barrington, 'Zoologist,' 1889, p. 32). The fourth, an immature female, from Dugort, Achill Island, co. Mayo, October 25th, 1890 (Ussher, 'Birds of Ireland,' p. 216). The fifth, an adult female, and the sixth, an adult male, were obtained in Killala Harbour, co. Mayo, on December 19th, 1896 and January 18th, 1897, respectively. These specimens are preserved in the National Museum, Dublin (R. Warren, 'Field,' May 1st, 1897, and 'Irish Naturalist,' 1897, p. 59).

It will at once be seen that the Irish records, with the exceptions of the first-mentioned, have taken place within recent years, those from Mayo being about the latest occurrences known in the British Isles. This Duck can be distinguished from the two preceding Scoters by a white patch on its forehead and another on the back of its neck. Its habits are practically similar to those of its congeners, it revels in the rough billows and surging foam, and may be seen in most unsheltered parts of the sea, during a severe hurricane.

Food.—The Surf-Scoter lives almost entirely on shell-fish which are often procured at a considerable depth beneath the surface of the water.

Flight.—The flight resembles that of the preceding species.

Voice.—The voice is croaking in character, like that of the last species, and not particularly harsh or loud.

Nest.—The nest is built on the ground among coarse herbage, usually near the margin of a lake. The eggs, six to eight in number, are of a beautiful pure white colour. Incubation does not take place until late in June.

Geographical distribution.—The Surf-Scoter breeds over a great area of North America, chiefly north of the United States, though rare in Greenland and North-east Siberia. In winter it migrates almost as far south as the West Indies on the Atlantic side, and California on the Pacific side. As a wanderer it has occurred in the Faroes, Norway, Lapland, the Gulf of Bothnia, Heligoland, and the north coast of France (Saunders).

DESCRIPTIVE CHARACTERS.

PLUMAGE. Adult male nuptial.—Plumage rich inky-black, except for a broad patch of white on the top of the head and another on the back of the neck.

Adult male, post-nuptial or eclipse.—An eclipse plumage, somewhat approaching that of the female, may be assumed by the adult male for a short period in early autumn.

Adult female nuptial.—Dull brown; lighter about the cheeks, breast, and abdomen. There is a white patch—more ill-defined than in the male—on the back of the neck, and sometimes two white spots on the cheeks.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female in plumage, but as a rule there is more white about the cheeks.

BEAK. Chiefly orange-red; deeper in tint about the nostrils, tip, and sloping ‘basal protuberance.’ On the side of the upper segment near the gape, is a large black patch.

FEET. Deep yellow or orange; webs dusky-brown.

IRIDES. Bright yellow.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	21	in.
WING	...	...	...	9·5	„
BEAK	...	...	...	1·5	„
TARSO-METATARSUS	...	...	...	1·5	„
EGG	...	...	...	2·3 × 1·6	in.

GOOSANDER. *Mergus merganser* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 34; Dresser, 'Birds of Europe,' vol. vi, pl. 452; Lilford, 'Coloured Figures,' vol. vii, pl. 58; Booth, 'Rough Notes,' vol. iii, pls. 18, 19.

In this and the succeeding species the beak is long, narrow, strongly toothed, and hooked at the extremity. Hence the popular name of 'Saw-Bill' as applied to the Mergansers collectively. Though resident in parts of the Highlands of Scotland, the Goosander is better known as a winter-visitant to British waters, preferring the shelter of estuaries, harbours, and fresh-water lakes, to the open sea. It is not uncommon on the eastern coasts of England and Scotland, but is rare on the western and southern sides. In Ireland, it is of irregular occurrence, but with the onset of severe weather¹ often appears in small numbers on our lakes, rivers, creeks, and harbours. It seldom arrives before the end of November, and is most plentiful in January. Large flocks are not met with, but parties consisting of from three to six may usually be seen. The male in mature plumage is very handsome, but is of rarer occurrence than the immature or female. When in company with the Red-breasted Merganser, the Goosander may be identified by its superior size, and by the greater amount of white in the plumage of the neck and breast.

Food.—This species is almost entirely piscivorous, and is not only capable of descending to a great depth under water, but of travelling at a great speed in pursuit of fish.

¹ In the severe winter of 1881, Goosanders were obtained in many parts of Ireland (Payne-Gallwey, 'Fowler in Ireland').

Though frequenting fresh as well as salt waters the flesh is distinctly disagreeable in flavour.

Flight.—The flight is much more powerful than that of the ordinary Diving Ducks.

Voice.—The note is rough and unmusical and sounds like *karr-karr*.

Nest.—The Goosander breeds in holes in trees or in the ground, and in some cases the nest is built in the shelter of nooks and crevices formed by overhanging banks and ledges of rock. In Denmark and other Continental countries this species sometimes builds in nesting-boxes set up by the natives for various kinds of Ducks (Saunders).



FIG. 18.—GOOSANDER.

The eggs, eight to thirteen in number, are creamy-white. Incubation begins about the end of April or the first week in May.

In Scotland the Goosander has bred in Sutherland, Perthshire, Argyll, Ross, and perhaps in other counties of the Highlands. With regard to references of its breeding in the Outer Hebrides, see Harting, 'Handbook of British Birds,' 1901, p. 263.

Geographical distribution.—Abroad, this species nests

in Northern Europe (including Iceland),¹ also in Denmark, North-east Germany, some of the Swiss lakes, Central and Eastern Russia. Further east it may be traced to Siberia and Central Asia as a breeding-species.

In winter it visits the waters of Southern Europe, Northern Africa, and Southern Asia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head, crest, and upper neck, rich glossy greenish-black; lower neck, breast, and abdomen, white, suffused with a delicate salmon-pink; upper back and scapulars, black; primaries, brown; wing-coverts, chiefly white; lower back and tail, light brown.

Adult male, post-nuptial or eclipse.—Somewhat resembles the adult female plumage, but distinguished by an indistinct black neck-ring, and by the darker back and whiter wings.

Adult female nuptial.—Head, crest, and upper neck, reddish-brown; chin and lower neck, impure white; breast and abdomen, dull white shaded with grey on the flanks; back and scapulars, ash-grey; primaries, brown.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female plumage, but the breast and flanks are marked with brown, and the crest is very short.

BEAK. Bright red; serrated and slightly hooked at the extremity.

FEET. Deep orange.

IRIDES. Red.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	26	in.	Female smaller.
WING	...	...	11	„	
BEAK	...	...	2.5	„	
TARSO-METATARSUS	...	...	1.9	„	
EGG	..	...	2.6	×	1.8 in.

Allied Species and Representative Forms.—The North

¹ Mr. Coburn, however, did not meet with it on his recent expedition to North Iceland in 1899 ('Zoologist,' 1901, p. 413).

American Goosander, though it does not rank as a distinct species, shows in the adult male a well-marked black band across the wing-patch (Saunders).

RED-BREASTED MERGANSER. *Mergus serrator* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 35; Dresser, 'Birds of Europe,' vol. vi, pl. 453; Lilford, 'Coloured Figures,' vol. vii, pl. 59; Booth, 'Rough Notes,' vol. iii, pls. 15, 16, 17.

The Red-breasted Merganser is the most abundant of the British Saw-billed Ducks. In many parts of Scotland and Ireland it is resident, breeding on islands or shores of inland lakes, and, to a less extent, in the vicinity of tidal estuaries; in England it occurs only as a migrant. There is a considerable increase in numbers during autumn and winter, due to the arrival of migrants travelling southward. In spring, a return movement takes place, flocks continuing to press northward until late in May.

In winter, the Red-breasted Merganser is rarely met with away from the tide: estuaries of large rivers, sheltered bays, and salt-water channels, are its favourite resorts. Assembling in large flocks, Mergansers may be seen swimming and diving in company with Wigeon and other common sea-fowl. Shy and vigilant by nature, they can rarely be approached within gunshot.

During the spring-season (usually about the middle of April, when the birds are pairing) I have observed from a boat, with the aid of a binocular, some fifty Mergansers engaged in sport about the mouth of the river Liffey, Dublin. Of a sudden, with necks stretched and lowered, and head-plumes fully erected, two or three adult males dash across the water, hotly pursuing the females; the latter dive to evade their suitors, and reappear on the surface behind the rest of the flock. Espied a second time by the ardent drakes, the chase is renewed, until a few of the females, too closely followed, take wing, alighting several hundred yards away.

In the water this bird swims low, little of its body being visible. On land it progresses in an awkward shuffling manner, assuming a semi-upright gait. Now and again I have met Mergansers standing on a sand-bank at

the edge of the ebbing tide. On December 16th, 1900, I lay concealed in a drain on one of the ooze-flats of the Dublin coast, watching the movements of hundreds of wading-birds. Presently a fine adult male Merganser alighted in a rough and muddy salt-water channel, some thirty yards from where I was crouching. The bird, not perceiving me, slowly moved in the water apparently swimming, but in an erect posture with its body almost completely visible above the surface. Now and then it plunged its head under water and appeared to capture something, but in this position it did not attempt to dive. When mid-stream was almost reached it lowered its body and swam in the ordinary way. Then it made three frantic efforts to dive, and, after much splashing and floundering about, was barely able to submerge its body. Eventually, after a lapse of about a quarter of an hour, it took wing and, rising high, flew out to sea. Leaving my place of ambush I proceeded to the edge of the channel. The water being muddy I could not see the bottom, but on measuring with a piece of stick I found that it was but a few inches in depth. It is therefore obvious that the bird was wading in the water in the erect posture for most of the time, and though a sufficient depth was reached at mid-stream to allow it to swim, even then, the channel was too shallow for diving purposes. To these observations I attach importance, as I have often, on previous occasions, noticed Mergansers standing about the edge of shallow channels, and it is evident that they fish occasionally by wading and plunging their heads under water after the manner of Herons; it may be added that the channel in question abounded in small sand-dabs, eels, and other fishes.

Food.—The Red-breasted Merganser is almost exclusively piscivorous and is destructive in the nesting-season to small salmon and trout. It plunges under water like a Cormorant and swiftly pursues its finny prey. As evidence of its indifference to vegetable diet, it is noteworthy that this bird often breeds round inland waters quite void of aquatic vegetation, and where rough stones and gravel line the beach and floor of the lake.

Flight.—The Merganser is swift and powerful on the wing, and may be seen frequently crossing bays and estuaries at a considerable height in the air.

Voice.—The voice is harsh and guttural, and resembles the syllables, *kurr-kurr-kurr*.

Nest.—The nest is generally situated on marine or fresh-water islands, sometimes on the mainland, and always near water; it is as a rule well concealed amid coarse herbage, such as tall grasses, nettles, scrub, or meadow-sweet; or it is sometimes built in tangled brushwood, under heather-tufts, or in the recess of an overhanging bank. But, on the other hand, I have found this bird nesting in quite exposed situations. For example, on an island in Lough Sheelin, co. Cavan, I found a nest built in a shallow recess between a few rocks, with no vegetation to hide the sitting-bird.

The nest is formed of dry grass, weeds, and small bits of twigs, and is lined with down. The eggs, eight to twelve in number, are of a light muddy yellowish-brown, slightly tinged in some instances with green. Incubation takes place about the beginning of June.

In the north-west of Scotland, including the island-groups, as well as in Ireland, this bird is a common nesting-species; in fact, in Ireland, it is one of the most numerous of our resident Ducks, though far from being as abundant as the Mallard (Ussher).

Geographical distribution.—Abroad, the Red-breasted Merganser nests in Temperate and Sub-arctic Europe, Asia and North America, migrating in the winter to the waters of Southern Europe, Northern Africa, eastward as far as Japan, and westward along the Atlantic sea-board to the Bermudas.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, crest (the plumes of which are much longer and more filamentous than those of the Goosander), and upper neck, glossy greenish-black; lower neck, white, intersected behind by a black line continuous with that of the back; upper breast and lower neck, reddish-brown, streaked with black; lower breast and abdomen, white; flanks, upper and under tail-coverts, finely pencilled with grey; inner scapulars, black; outer ones, white; wing-coverts, chiefly white, barred across with narrow black lines; primaries and tail, brownish-black; at the bend of the wing is an ornamental tuft of white feathers, margined with black.

Adult male, post-nuptial or eclipse.—Somewhat re-

resembles the adult female plumage, but distinguished by the slate-grey markings on the breast and flanks.

Adult female nuptial.—Head and neck, reddish-brown; there is a distinct black bar across the wing. The plumage bears a general resemblance to that of the female Goosander, but the back and scapulars are brown in the Merganser, rather than ash-grey.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female plumage.

BEAK. Red; shaped like that of the Goosander.

FEET. Deep orange-red.

IRIDES. Red.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	24 in. Female smaller.
WING	...	...	9.5 „
BEAK	...	...	2.25 „
TARSO-METATARSUS	...	...	1.5 „
EGG	...	...	2.5 × 1.7 in.

SMEW. *Mergus albellus* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 37; Dresser, 'Birds of Europe,' vol. vii, pls. 454, 455; Lilford, 'Coloured Figures,' vol. vii, pl. 60; Booth, 'Rough Notes,' vol. iii, pl. 14.

The Smew, the smallest of the Mergansers, annually resorts to British waters, though nowhere along our coasts can it be considered numerous. It is most frequently met with off the east coast of England and Scotland. It probably occurs annually in Ireland, yet it has not very often come under the notice of ornithologists in that country. It is partial to both fresh and salt water, and generally appears during or after severe wintry weather; after a gale it should be looked for on large sheets of fresh water. The late Mr. E. Williams informed me that he purchased immature and female birds in the Dublin markets, which were taken during rough weather, on inland waters. In the spring this species returns to northern latitudes to breed.

Few birds make a more handsome and effective show for museum-purposes than a well set-up adult male Smew in

full nuptial dress. The plumage of unsullied white, here and there interrupted by bands and patches of velvety-black, is most beautiful, and in nicety of size, neatness of shape, and grace of deportment, no other bird can well surpass it. Hence the adult males are much sought after, and are very scarce and difficult to procure. They appear to be more strictly maritime in their habits than the females and young; even during rough weather the former keep out to sea, while the latter will usually avail themselves of the shelter of bays or inland waters. So comparatively scarce is the old drake, that notwithstanding its striking plumage it is practically unknown to fishermen, who call this species the 'Red-Headed Smew,' from the colour of the female and young. This Duck, as a water-bird, is exceedingly active, diving and swimming with great alacrity, but on land it progresses slowly and in an ungainly manner, due to its feet being placed so far back.

Food.—The food, which is obtained by diving, consists mainly of fish, but small crabs and molluscs are also eaten.

Flight.—The flight is strong and rapid.

Voice.—The voice is grating in character, the notes resembling the syllables *curr-curr-curr-curr*. In the breeding-season a somewhat softer whistling note may be heard.

Nest.—The nest is built in holes in trees; thus eggs were taken by Wolley in Finnish Lapland,¹ "from a hollow in an old rotten birch-stump on June 8th, 1857" (Saunders). The nest is lined with white down. The eggs, seven or more in number, are cream-coloured.

*Geographical distribution.*²—The Smew breeds in Northern Russia and Siberia, its range being limited by the forest-growth. On its winter migration it visits the seas and inland waters of Southern and South-eastern Europe and Asia, while westward, in Europe and North Africa, it spreads as far as the sea-board of the Atlantic Ocean.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, chiefly silken-white, except the lower feathers of the crest (which are

¹ Finnish Lapland appears to be the western limit of the breeding-range of this species.

² In the British Museum there is a specimen of a Smew which is said to have come from North America.

greenish-black), and a black patch surrounding the eye which reaches in front as far as the base of the beak; neck, breast, abdomen, and under tail-coverts, white; wings, chiefly white, barred with black; primaries and tail-feathers, brownish-black; upper tail-coverts, brownish; back, black; scapulars, white; flanks, finely pencilled with grey; from the upper part of the back a narrow curved black line extends forwards over the root of the neck; another curved line passes across the front of the wing.

Adult male, post-nuptial or eclipse.—Resembles the female plumage, but at once distinguishable by the presence of the two narrow curved black lines described above.

Adult female nuptial.—Head, crest, and back of neck, chestnut; black patch in front of eye; round the neck is a collar of light greyish-brown; back, lighter in shade than in the male.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—The back and wings are to a large extent mottled-grey, and there is no black patch on the face.

BEAK. Slate-blue; serrated like that of the Merganser, but much shorter in proportion.

FEET. Dull bluish-grey.

IRIDES. Red.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	17.5 in.	Female smaller.
WING	...	...	7.6 "	
BEAK	...	...	1.25 "	
TARSO-METATARSUS	...	...	1 "	
EGG	...	...	2 × 1.45 in.	

HOODED MERGANSER. *Mergus cucullatus* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 36; Dresser, 'Birds of Europe,' vol. ix, pl. 696; Lilford, 'Coloured Figures,' vol. vii, pl. 61.

The Hooded Merganser, a North American species, is an extremely rare wanderer to British waters. Ireland has yielded most records, about six in number. Only three of these are thoroughly substantiated. Mr. Ussher has failed to trace two specimens supposed to have been shot and preserved; one stated to have been obtained in 1840 at

Dingle Bay, co. Kerry, by Dr. Chute (Thompson); the other bird, as recorded by Watters ('Birds of Ireland'), was shot in the co. Meath.

Mr. J. G. Millais is in the possession of a specimen supposed to have been killed in Tralee harbour, co. Kerry, in 1880. The three remaining birds were shot by Sir R. Payne-Gallwey, who writes as follows:—"I had the good fortune to kill two of these birds in the south of Ireland in December 1878, and a third in the very severe frost of January 1881, on the coast of Kerry, after a heavy gale from the north-west. All three birds were shot on the tide. One was an adult male and two were females. In my anxiety to obtain the former I fired at such close quarters that I cut its head clean off, but it was afterwards fixed to the body when the bird was preserved" ('Letters to Young Shooters,' Third Series, pp. 191, 192). "From what I saw of those I shot, they appeared to fly faster and with a more darting motion than other Mergansers, and though diving with equal facility, not excelling their congeners" ('Fowler in Ireland,' p. 122).

A specimen from the Menai Straits, North Wales, obtained in the winter of 1830-31, has been described and figured by Eyton ('History of The Rarer British Birds,' p. 75). Stevénson, in his 'Birds of Norfolk,' iii, p. 228, refers to a male of this species obtained in Norfolk in the winter of 1837-38. Less authenticated statements are omitted here.

From the above data it may be seen that the Hooded Merganser has touched most often on the western sea-board of Ireland, as we might expect from a Trans-Atlantic wanderer.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—The most noticeable part of this bird's plumage is its handsome black and white semi-circular hood, the white feathers of which run back from behind the eye¹ and spread out in a fan-shaped manner, the tips of the fan being edged with black. The hood is thick and bushy, and composed of short, wavy feathers; it differs materially from the crests of the larger Mergansers, the plumes of which are pointed, elongated, and sparsely arranged. Neck and back, black; primaries, rump, and

¹ A white patch of similar distribution is to be seen on the Buff-headed Duck, so that at a distance the two species might be confounded.

tail, dark brown; wing-coverts, chiefly black, barred with white; elongated and decurved scapulars, and inner secondaries, white, edged with black; lower neck and upper breast, white, interrupted by two black crescents; abdomen and under tail-coverts, white; flanks, tinged with light brown.

*Adult male, post nuptial or eclipse.*¹—It would appear that the adult male of this species (like other Mergansers) assumes a plumage in late summer which approaches that of the female.

Adult female nuptial.—The head-crest, which is longer and more drooping than that of the male, is of a reddish-brown colour; head, back of neck, back, and wings, brown; chin, white; front of neck, light brown; breast and abdomen, white.

Adult winter, male and female.—Similar to the respective nuptial plumages.

Immature, male and female.—Resembles the female plumage, but the crest is very rudimentary or wanting.

BEAK. Black.

FEET. Dull red.

IRIDES. Bright yellow.

EGG. Ivory white: clutch, five to eight.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	19	in.
WING	...	...	...	7.75	"
BEAK	...	...	...	1.5	"
TARSO-METATARSUS	...	...	...	1.5	"
EGG	...	...	...	2.1 × 1.75	in.

¹ *Note.*—It seems highly probable that the adult males of all the Palearctic and Nearctic Ducks which differ in plumage from the females, assume in late summer, and usually for a short period, an eclipse dress. It would appear that in this garb several species are overlooked. The reader is referred to an interesting article in the 'Avicultural Magazine,' 1906, pp. 259 *et seq.*, where Mr. Finn maintains that the Ferruginous Duck assumes no eclipse plumage; on the other hand, in the Bulletin of the Brit. Ornith. Club, vol. xvi, p. 80, a reference is made to Naumann's Naturgesch. Vög. Mitteleuropas, pl. x, fig. 4, and pl. xiv, fig. 1, where the eclipse plumage of Ferruginous Duck is figured.

Mr. J. Lewis Bonhote has recently described an intermediate plumage of the Shoveler (Bull. B.O.C., vol. xvi, p. 64), and, in detail, the eclipse plumage of the Snew (Avicult. Mag., 1905, p. 122).

In Cat. Birds Brit. Mus., xxvii, p. 408, the eclipse plumage of the Velvet Scoter is described, but of the Common Scoter it is stated "males in moulting dress are unknown," p. 403 (Salvadori).

Order COLUMBÆ.¹

Family COLUMBIDÆ.

RING-DOVE. *Columba palumbus* (Linnæus).**STOCK-DOVE.** *Columba ænas* (Linnæus).**ROCK-DOVE.** *Columba livia* (J. F. Gmelin).**TURTLE-DOVE.** *Turtur communis* (Selby).**RUFOUS TURTLE-DOVE.** *Turtur orientalis* (Latham).Order PTEROCLETES.¹

Family PTEROCLIDÆ.

PALLAS'S SAND-GROUSE. *Syrnhaptcs paradoxus* (Pallas).Order GALLINÆ.¹

Family TETRAONIDÆ.

CAPERCAILLIE. *Tetrao urogallus* (Linnæus).**BLACK GROUSE.** *Tetrao tetrix* (Linnæus).**RED GROUSE.** *Lagopus scoticus* (Latham).**PTARMIGAN.** *Lagopus mutus* (Montin).

Family PHASIANIDÆ.

PHEASANT. *Phasianus colchicus* (Linnæus).**COMMON PARTRIDGE.** *Perdix cinerea* (Latham).**RED-LEGGED PARTRIDGE.** *Caccabis rufa* (Linnæus).**QUAIL.** *Coturnix communis* (Bonnaterre).

¹ The species (consisting entirely of Land-Birds), which belong to the Orders COLUMBÆ, PTEROCLETES, and GALLINÆ, are here mentioned, so that the links in the chain of classification between the preceding and succeeding Orders of Aquatic Birds, may be seen.

Order GRALLÆ.

Sub-Order FULICARIÆ.

Family RALLIDÆ.

CORN-CRAKE. *Orex pratensis* (Bechstein).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 87; Dresser, 'Birds of Europe,' vol. vii, pl. 499; Lilford, 'Coloured Figures,' vol. iv, pl. 55.

The Corn-Crake,¹ or Land-Rail, is by far the best-known member of its family. It is widely distributed in summer over the British Isles and is even plentiful on many of the remote islands off the western sea-board of Scotland and Ireland. In some districts, the birds are very abundant, and their harsh voices may be heard in chorus from the meadows around, yet comparatively few persons are familiar with the size and colour of this species. Like other Crakes, it skulks in cover during the day-time, and is most reluctant to take wing, unless suddenly surprised in close quarters by a dog. It is mainly the voice which is known to the general public, and were the bird more silent it might pass as a much scarcer summer-visitor.

The Corn-Crake usually arrives during the latter half of April and early May,² remains to breed during the summer, and takes its departure in October. It is quite true that a very small percentage of those that breed here are recorded annually in winter from some part or other of the British Isles, but this is no criterion that this species is not migra-

¹ The voice is such a characteristic feature that I much prefer the name Corn-Crake to Land-Rail, besides, this bird is more closely allied to the succeeding Crakes (Porzana) than to the Water-Rail (Rallus).

² As an exceptionally early occurrence, may be mentioned a bird caught on the Tuskar rock off Wexford, on March 28th, 1884 (Ussher).

tory.¹ In Ireland, where the seasons are generally less severe than in England or Scotland, there have been numbers of records of Corn-Crakes taken in winter, but according to Mr. Ussher, though birds have been obtained in November, December, January, and February, there is nothing to show that any have remained until March. It is also quite true that these few stragglers, or winter Corn-Crakes, are generally discovered ensconced in holes in walls or banks. They are not hibernating in the true physiological sense, but being accustomed to more southern climes in winter, are simply

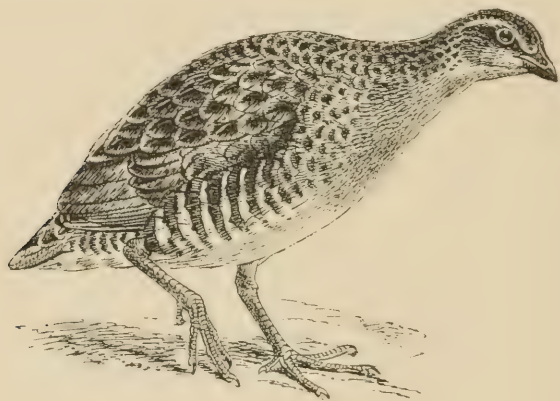


FIG. 19. —CORN-CRAKE.

seeking what warmth and shelter they can obtain; indeed they are often found to be slightly injured by shot,² or in a debilitated condition, and so unable to undertake a journey across the sea.

In the Outer Hebrides there have been several instances of these birds remaining throughout the winter, and one was recorded at the unusual date of March 3rd, 1902 (Harvie-Brown, 'Avifauna of the Outer Hebrides').

Flight.—One must not suppose that the Corn-Crake is weak on the wing, because, when flushed by a dog out of the

¹ Sportsmen sometimes make the mistake of stating that they often shoot Corn-Crakes in winter and can obtain one any winter. I have frequently acceded to their kind offers and have duly received, just as I expected, specimens of Water-Rails.

² For instance, Mr. W. J. Williams records a specimen obtained from co. Armagh, on February 2nd, 1906, in which the wing had been previously broken, but the bone had united ('Irish Naturalist,' 1906, p. 112).

long grass, it flits off in an awkward manner with its legs dangling down, only to alight in the same or an adjoining meadow; for this bird is nocturnal in its habits, and when awakened by the sudden approach of a dog, finding no chance of escape by running and hiding (which all Crakes prefer), terrified, it shoots up vertically through the long grass, dangling its legs parallel to the grass-stems so as not to impede its flight.¹ I attribute its very short flight under these circumstances to sensitiveness to daylight, for I have noted that when hunting Corn-Crakes in the summer with dogs, if the sun be shining very brightly, they rise on the wing only to drop again immediately.

But I have observed the flight of this species when migrating, to be very different. For instance, at daybreak on August 13th, 1890, when steaming from Belfast to Dublin and about ten miles off the coast of the co. Down, I observed a Corn-Crake flying over the sea. As it neared our steamer it descended in its flight and passed us in a rather zig-zag manner and with great velocity. At one time it came within fifteen yards of the steamer flying almost on a level with the deck. The legs were certainly not dangling down, and as far as I could ascertain they were stretched out behind. At night, these birds have been observed by hundreds round lighthouses and light-ships, and the "repeated occurrence of the Corn-Crake several miles from shore—killed striking against lanterns between 100 and 200 feet above the sea-level—must satisfy the most sceptical that this species can fly at a high level with great power and velocity."² But it is not surprising that this bird should be endowed with great and sustaining powers of flight: it is not only an essentially migratory species, but one which at times ventures upon vast peregrinations across the Oceans. Thus Professor Newton states that "in the course of its wanderings it has now been known to reach the coast of Greenland, and several times that of North America, to say nothing of Bermuda, in every instance we may believe as a straggler

¹ Many other nocturnal birds when startled in the daytime from their sleeping-quarters take wing in quite a different manner from their ordinary evening flight. Witness the confused bustling flight of a Woodcock, or even of an Owl, disturbed in the daytime, compared with the buoyant slow-flapping evening flight.

² Barrington and More, Migration Reports, 1886, p. 5.

from Europe, or Barbary. An example has even been recorded from New South Wales" (*Rec. Austral. Mus.*, ii, p. 82).

It is hardly less surprising that anyone who has ever taken the trouble to carefully examine and to weigh a dead Corn-Crake can possibly doubt its power of flight. Compared, for instance, with that of many other migratory species, we find that its body is proportionately lighter in weight, its pinions, though not long and pointed, are of considerable breadth and strength, while its narrow compressed neck and body offer little resistance to the velocity of its flight.

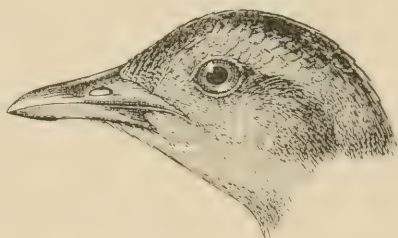


FIG. 20.—HEAD OF CORN-CRAKE. $\frac{1}{2}$ Nat. size.

Voice.—I shall not attempt to describe in syllables the familiar rasping call-note of the male Corn-Crake. It can be readily reproduced by drawing a stick across the teeth of a comb. By this form of mimicry the bird may be gradually attracted to within a few yards, and the performer who keeps still and lies low in a ditch will be amused by watching how a suspicious old male will tread cautiously through the grass until he comes into full view at the edge of the meadow. Here he may be seen commencing to 'crake' defiantly in answer to his supposed rival. But I have found from experience that the artificial voice will carry much further if, instead of using a stick and a comb, the edge of a flat dry bone (*e.g.*, a piece of a rib of an ox), about six inches in length, is passed over the edge of another bone which has been notched and toothed like a saw. By such a contrivance I have coaxed a Corn-Crake from one end of a large field to another. The voice is exceedingly powerful, and when heard close at hand, seems by its vibrations almost to shake the ground on which the

bird is standing. I am satisfied after repeated observation, that this species possesses no peculiar powers of modulating its voice after the fashion of a ventriloquist. The note is a loud vociferous rasp, invariably uttered with the greatest amount of power and zest; moreover, the careful listener will generally hear a loud call followed by a more distant one, and this alternation often continues for some time. This is simply the result of two males in different parts of a meadow, 'craking' in response, as though contending with one another for their right of territory during the breeding-season. The 'crake' is sounded both when the bird is running and standing, hence the constant alteration in the volume, but not in the tone of the voice, as the birds move rapidly through the meadow.

Sir R. Payne-Gallwey rejects the idea of ventriloquism in the Corn-Crake, and attributes the variations in sound to the alternate calling of two males, while challenging each other, and in the meantime moving from place to place.

The note is commonly heard towards evening and during the night, usually when the bird is in cover. Mr. Ussher, however, cites a case of a Corn-Crake "standing openly in a field before a house in Donegal while it craked loudly." He also describes another call "like the squeal of a trapped rabbit, and in one case the bird, which produced it in a suppressed tone, was approaching its hatching mate."

Food.—This species lives on insects, small worms, slugs, and vegetable substances, including the seeds of grasses, and clover. Its flesh is very palatable, and in former days was considered a table luxury, for so Dryden says :—

"The rayle which seldom comes but upon rich men's spits."

Nest.—It is quite a mistake to think that the Corn-Crake is exclusively a 'dry-land' bird, breeding only in long meadows, clover, or corn-fields: the large majority do resort to such situations, nevertheless in some cases the nest is built among damp herbage. In the co. Wicklow I have more than once flushed a hatching-bird from off her nest on a small grass-grown hillock, damp and sodden and surrounded by bog-land and reeds. That the Corn-Crake is in some cases partially aquatic like its congeners, in the nesting-season, is borne out by the remarks of Mr. Ussher, namely, that on small islets off Wexford, it "nests annually in rank grass among the colony of Terns," and again

in describing its distribution in Ireland, he says, it "is to be found on flat, sedgy islands in the larger lakes, where one cannot walk with dry feet." The nest is composed of dry grass and small weeds. The eggs, six to ten in number, are of a very pale buff-colour, spotted and finely blotched with reddish-brown.

Incubation begins early in June. Hundreds of hatching-birds and their eggs are destroyed annually by the mowing-machine, but the numbers are maintained by the birds that breed in corn, which is not cut until the broods are hatched, and also by those which resort to uncultivated ground where the mowing-machine is not used.

Geographical distribution. — Abroad, the Corn-Crake breeds freely over a large area of Temperate Europe, extending its range in summer even to the Arctic Circle. Eastward, it can be traced as a breeding-species over the greater part of the Asiatic Continent. In winter it migrates to Central and Southern Africa as well as to Arabia.

DESCRIPTIVE CHARACTERS.

PLUMAGE.¹ *Adult male nuptial.*—Top of head, back of neck, back, and scapulars, dark brown, the feathers being broadly edged with dull yellowish-buff; wing-coverts and primaries,² beautiful rich chestnut, conspicuous when the bird is flying; cheeks, greyish; throat, white; breast, greyish-buff; abdomen, greyish-white; flanks, alternately barred with chestnut and buff.

Adult female nuptial.—The grey on the head, and the chestnut on the wings are duller than in the male.

Adult winter, male and female.—The grey on the head and breast is replaced by ochreous-brown, and some of the wing-coverts show whitish bars.

Immature, male and female.—Resembles the winter adult plumage.

Nestling.—Dark brownish-black.

BEAK. Light brown.

FEET. Brown.

IRIDES. Light hazel.

¹ Partial and entire albino Corn-Crakes are on record.

² According to Mr. J. L. Bonhote, the primaries and secondaries are shed simultaneously. ('Zoologist,' 1900, p. 29).

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	10.5 in. Female smaller.
WING	...	...	5.25 „
BEAK	...	...	0.75 „
TARSO-METATARSUS	...	...	1.8 „
EGG	...	...	1.45 × 1.1 in.

SPOTTED CRAKE. *Porzana maruetta* (Leach).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 88; Dresser, 'Birds of Europe,' vol. vii, pl. 496; Lilford, 'Coloured Figures,' vol. iv, pl. 56.

This bird, intermediate in size between the Corn-Crake and Little Crake, is an annual summer-migrant to England, though not plentiful. A certain number remain with us during the summer to breed, others occur as birds of double passage in spring and autumn, while a very few sojourn in our Isles for the winter. In the south of England the Spotted Crake usually arrives about the middle of March (O. V. Aplin, 'Zoologist,' 1890 and 1891). In October there is a general move southward, both of the birds which have remained throughout the summer, and of those which arrive after the nesting-season, in the early autumn.

To Scotland the Spotted Crake is chiefly a passing visitor in autumn, but it has bred in several counties: specimens have been procured in the Orkneys and Shetlands. In the latter Islands the latest record appears to be that of a female bird taken in 1901, close by Cliff Loch, being the fourth obtained in the Shetlands (Saxby, 'Zoologist,' 1901).

In Ireland this species is apparently scarce; it has been obtained chiefly in autumn. However, owing to its skulking habits it is hard to estimate the numbers which are annually overlooked in the spring and early summer, *i.e.*, during the close season from shooting. Indeed, as pointed out by Mr. Ussher, when the sportsman starts 'flapper' shooting in early August, he invades the haunts of the Spotted Crake, hence the number of specimens recorded in that month. In October the birds appear

most numerous, and for a two-fold reason; firstly, the shooting has become very general, secondly, the birds, which may have remained all the summer, are reinforced by passing autumn-migrants. It is very unlikely, save in a few cases, that the Spotted Crake winters in Ireland. The only counties without records of its occurrence are the following:—Limerick, King's Co., Meath, Leitrim, Galway, Cavan, Kilkenny, Carlow, Kildare, Longford, and Monaghan.

Like the Corn-Crake, this species may be found frequenting uplands and dry meadows, but it is more partial to wet ditches abounding in a thick growth of brambles and weeds, in the midst of which it can hide from its enemies. It is most difficult to induce this bird to take wing, for even when hotly pursued by a good water-dog it will dodge in and out, making for the most intricate cover, from which it can be dislodged only with the greatest difficulty. As we catch a glimpse of it stealing silently away, we regard it for a moment as a small mammal, perhaps a rat, not a bird. Mr. Harting has noted it "swimming like a little Moorhen, nodding its head and flirting its tail."

Flight.—The Spotted Crake can fly at a considerable height and with great speed. When migrating around the coast it is known to fly some distance out to sea. As an instance of this fact we find that it has been taken at isolated lighthouses, such as the Tearaght, off the co. Kerry, on August 21st, 1887, and the Fastnet, off the co. Cork, August 20th, 1895 (Barrington, 'Migration of Birds').

Voice.—The note, as described by Mr. Saunders, is a peculiar *whuit, whuit*.

Food.—The food consists of aquatic insects and vegetable material, together with worms and slugs.

Nest.—In its nesting-habits this Crake is strongly aquatic. It usually builds in thick reed-grown marshes, or in a tussock; sometimes on an islet of sedges with water all round. The outside of the nest is formed of long flags; the cup-shaped centre is lined with fine soft grass (Saunders). The eggs, eight to ten in number, are greenish-brown, blotched and dashed with dark reddish-brown.

The Spotted Crake has nested in the following districts in England:—Several of the southern counties, East Anglia, the Humber, Trent, and Solway districts, Durham, and Northumberland.

In Wales it has nested in the bogs of Breconshire.

In Scotland it has bred as far north as Elgin, also in Kirkcudbrightshire and Dumfriesshire (Saunders).

In Ireland there is one authenticated instance, namely, from the county Roscommon, where Colonel Irwin obtained a nest with nine eggs in a swamp near Castleplunket, about 1851. At that period this species was not uncommon in the district (Ussher). It is worth noting that, according to Thompson, a young bird, still retaining some *down*, was obtained in the co. Kerry.

Geographical distribution.—Abroad, it breeds freely in many countries of Central and Southern Europe. It reaches latitude 65° N. in Scandinavia, but has not yet been noticed in Iceland or the Faroes, though twice obtained in Greenland (Saunders). Eastward it can be traced, as a breeding-species, to Central Asia; in winter it migrates to India, North and Central Africa.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, dark brown; back and wings, greenish-brown, with darker streaks, and prettily speckled with white especially about the neck and tail-coverts; cheeks and throat, dull grey; breast, brown, also speckled with white; flanks, barred with brown and white; abdomen, grey.

Adult female nuptial.—Duller in colour than the male.

Adult winter, male and female.—Somewhat similar to the respective nuptial plumages except that the white spots are more profuse, and are visible on the cheeks, throat, and side of neck.

Immature, male and female.—The spots are much more profuse than in the adult, and the throat is white.

Nestling.—Glossy greenish-black.

BEAK. Yellow, shaded with red at the base.

FEET. Yellowish-green.

IRIDES. Reddish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	9	in.
WING	...	...	...	4·5	„
BEAK	...	...	...	0·5	„
TARSO-METATARSUS	...	...	...	1·25	„
EGG	...	...	...	1·3 × ·9	in.

Note.—"A specimen of the Carolina Crake, *P. carolina*, shot near Newbury, Berks, was exhibited at the meeting of the Zoological Society, February 14th 1865, by Professor Newton, who remarked upon the powers of endurance in their flight of various members of the family Rallidæ, and upon the capture of this species on one occasion in Greenland. In the 'Field' of December 4th 1897, Mr. C. Clive Bayley records that two came on board the yacht "Vampa" in about latitude 20° N. and longitude 55° W.; one of them taking food freely and reaching England alive. The adult may be distinguished from the European bird by its black face" (Saunders).

LITTLE CRAKE. *Porzana parva* (Scopoli).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 90; Dresser, 'Birds of Europe,' vol. vii, pl. 498; Lilford, 'Coloured Figures,' vol. iv, pls. 57 and 58.

The Little Crake is a rare visitor in spring and autumn. The earliest British specimen on record is a bird obtained in Sussex in March, 1791 (Markwick, 'Catalogue of Sussex Birds,' p. 9). Several have been obtained since in the same county. The species has been most often recorded from Norfolk.

In November, 1898, a Little Crake was procured in Shropshire, seven miles north of Shrewsbury. This occurrence is of special interest, for it appears to be the first authenticated record "for any of the western counties north of Somerset" (H. E. Forrest, 'Zoologist,' 1900, p. 280). Specimens have also been recorded from the following counties, chiefly maritime:—Cumberland, Lancashire, Yorkshire, Lincolnshire, Suffolk, Cambridgeshire, Oxfordshire, Middlesex, Kent, Hampshire, Dorset, Somerset, Devon, and Cornwall.

In Scotland one was procured in March, 1852, and is now in the collection of Mr. J. H. Gurney (Saunders).

Only two examples have been taken in Ireland. One, a male from Balbriggan, co. Dublin, shot March 11th, 1854. This bird is preserved in the collection of the late Canon Tristram, acquired by the Liverpool Museum. The

second was obtained near Rathangan, co. Kildare, on November 12th, 1903 (Williams, 'Zoologist,' 1903, p. 460). As there has been a lapse of almost half a century between the two captures, and as the species has been taken so much oftener proportionately in England, it is probable that this diminutive Crake, skulking in its habits, has been to a certain extent overlooked. This is still more likely when we bear in mind that the numbers of workers at Irish ornithology are comparatively few. Even in England I have little doubt that the bird often escapes observation.

In its general habits the Little Crake may be well ranked among our aquatic birds. It not only frequents marshes, but it constantly enters the water, swimming and diving in search of food. Its diminutive form and light weight¹ allow of its running along the surface of floating leaves such as those of the water-lily, a habit with which we are familiar in the case of nestling Water-Hens and Coots.

Flight.—This bird is rapid on the wing, but it generally steals into cover on foot to escape its enemies.

Voice.—The note is a defiant *kik, kik, kik* (Saunders).

Food.—This consists for the most part of aquatic insects and vegetables; small worms and slugs are also eaten.

Nest.—The nest is built among tufts of sedges raised above the level of the water. The lining materials used are short, broad bits of reed-blades (W. Eagle Clarke). The eggs, about seven to the clutch, are pale olive, with darker greenish-brown markings.

There have been no records of the Little Crake breeding in our Isles, but it is quite conceivable that some of the spring-visitors may remain during the summer for this purpose, and be overlooked.

Geographical distribution.—Abroad, this species breeds in many countries in Central, Southern, and Eastern Europe, also in Asia and parts of North Africa. In winter it migrates to the Tropical regions of Asia and Africa.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head, except the centre of the crown, which is olive-brown, throat and front of neck, breast and abdomen, slate-grey; under tail-coverts, spotted

¹ Which does not exceed $1\frac{3}{4}$ ozs.

and barred with white ; thighs, spotted with a similar colour ; hind-neck, back, and wings, olive-brown, the back being broadly streaked with black and marked along the middle line with a few white spots ; primaries, entirely brown, the outer web of the first thus differing from that of Baillon's Crake ; tail-feathers and inner secondaries have dark centres and broad greenish-brown margins.

Adult female nuptial.—Top of head, back and sides of neck, light brown ; streak over the eye, grey ; chin and throat, white ; front of neck, breast, and abdomen, rich tawny-buff ; sides and under tail-coverts, ash-grey, thinly barred with white.

Adult winter, male and female.—Bears a general resemblance to the respective nuptial plumage.

Immature, male and female.—Breast and abdomen, pale buff, almost white ; flanks more streaked than in the adult.

Nestling.—Glossy-black with a greenish tinge.

BEAK. Red at base ; point, green.

FEET. Green.

IRIDES. Red.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	8	in.
WING	...	...	...	4·2	„
BEAK	...	...	...	0·5	„
TARSO-METATARSUS	...	...	...	1·4	„
EGG	...	...	...	1·1	× ·85 in.

BAILLON'S CRAKE. *Porzana bailloni* (Vieillot).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 89 ; Dresser, 'Birds of Europe,' vol. vii, pl. 497 ; Lilford, 'Coloured Figures,' vol. iv, pl. 59.

Baillon's Crake (which more strictly speaking might be called the Little Crake, for it is smaller than the last species) is a rare and an uncertain visitor, chiefly in spring and autumn.¹ But there is stronger evidence, than in the

¹ Mr. Harting is of the opinion that Baillon's Crake is a local resident in England, the bird having been procured in nearly every month of the year. Mr. Saunders, on the other hand, considers that there is no

case of the Little Crake, that this species may remain with us in some districts during the summer months to breed. Most specimens have come from Norfolk. It has also been recorded from the following counties, seven of which are maritime and have furnished us with examples of the Little Crake:—Cumberland, Lancashire, Yorkshire, Suffolk, Derbyshire, Nottinghamshire,¹ Hertfordshire, Dorset, Somerset and Cornwall.

In Wales this species appears to have been obtained but once, namely at Llangwstenin, near Colwyn Bay, on November 6th, 1905 (H. E. Forrest, 'Zoologist,' 1905, p. 465).

From Scotland there are four records:—One probably obtained in Sutherland in 1841 (in the Sinclair collection at Thurso); one from Dumfriesshire, recorded by Jardine, 1842; one from Stranraer, 1891; and one from Renfrewshire, in May, 1893; the last bird having struck a telegraph wire (Saunders).

In Ireland only two² examples have been obtained, one in spring, the other in autumn, and both many years ago. The first was procured on a bog near Youghal, on October 30th, 1845. It was subsequently examined by the late Mr. A. G. More ('Zoologist,' 1882, p. 113). The second bird was captured alive on Tramore Bay, co. Waterford, on April 6th, 1858. It was presented in 1892, by Dr. Burkitt, to the Dublin Museum.

Baillon's Crake is also a bird of the wet marshes, though, according to Mr. Saunders, it "appears to be less partial to meres and open waters than the Little Crake . . . if disturbed it runs like a water-rat in preference to taking wing."

Flight.—Like other Crakes, it is rapid in its flight when once fairly started, but one very seldom has the opportunity of watching its aerial movements.

evidence to show that the bird remains throughout the year, though a specimen is said to have been captured on some ice near Cambridge in January, 1823.

¹ A specimen was picked up under telegraph wires near Nottingham, on June 22nd, 1893 ('Zoologist,' 1893).

² It is highly probable that this diminutive Crake has also been repeatedly overlooked; sportsmen when beating the marsh with a well-trained dog may secure one. Even if killed by a dog and almost torn to pieces, the remains should not be thrown away, but sent at once to a competent authority for proper identification.

Voice.—The note has been described as *kek, kek, kek*. The nestling utters a low piping cry (Saunders).

Food.—The food, like that of the preceding species, consists largely of aquatic insects and plants, together with small worms and slugs.

Nest.—The nest, large for the size of the owner, is built amid the shelter of reeds and sedges and such like marshy vegetation. The eggs resemble those of the Little Crake, but the ground-colour and other markings are darker.

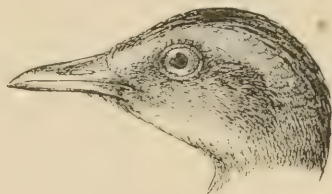


FIG. 21.—HEAD OF BAILLON'S CRAKE. Nat. size.

The only counties in the British Isles where this bird has been found nesting appear to be Norfolk and Cambridgeshire. In the latter, two nests with eggs, said to belong to this species, were discovered in June and August, 1858 ('*Zoologist*,' 1859). Two more were taken in the former county in June and July, 1866 ('*Zoologist*,' 1866). This bird has probably nested in other counties and escaped observation.

Geographical distribution.—Abroad, it breeds at no great distance from our Isles, viz., in Holland and North-west France, so that, as indicated by Mr. Saunders, if it nested occasionally with us, the fact should not cause great surprise. It also breeds in Spain, Portugal, Switzerland, Italy, and other countries in Central, Southern and South-eastern Europe, as well as in Western Asia and on the greater part of the African Continent as far as lat. 30° S.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, back of neck, back, and wings, nut-brown, spotted with black and white; cheeks, throat, breast, and abdomen, slate-grey; flanks and under tail-coverts, strongly barred with black and

white; outer web of the first primary, white, a distinguishable feature (*cf.* Little Crake).

Adult female nuptial.—Breast and abdomen, light grey; chin, nearly white; wings, more thickly spotted with white than in the male; ground-colour of the neck, light brown marked with darker streaks. The white on the web of the first primary is less distinct than in the male.

Adult winter, male and female.—Resembles the respective nuptial plumages, but the shade of the throat is much lighter, almost white.

Immature, male and female.—Breast and abdomen, barred with different shades of brown; the remainder of the plumage resembling that of the female.

Nestling.—Glossy-black.

BEAK. Green, except the base which is red.

FEET. Dull olive.

IRIDES. Red.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	7 in.
WING	...	...	...	3·45 „
BEAK	...	...	...	0·5 „
TARSO-METATARSUS	...	...	...	1 „
EGG	...	...	...	1 × ·8 in.

Note.—As indicated by Mr. Harting, the Little Crake resembles a miniature Corn-Crake, whereas Baillon's Crake resembles a miniature Spotted Crake (*cf.* Little Stint with Dunlin, and Temminck's Stint with Common Sandpiper).

Allied Species and Representative Forms.—*P. pusilla*, with a distinguishable brown stripe through the eye and ear-coverts, is the Eastern representative (Saunders).

WATER-RAIL. *Rallus aquaticus* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 86; Dresser, 'Birds of Europe,' vol. vii, pl. 495; Lilford, 'Coloured Figures,' vol. iv, pl. 60.

The Water-Rail, tolerably common and widely distributed over the marshy lands of the British Isles, may be

readily distinguished from the Corn Crake by its much longer beak and darker plumage. Unlike the latter, it is resident to a considerable extent, and indeed, is generally observed in autumn and winter more often than in the breeding-season. It is not improbable that numbers of our home-bred birds move southward in autumn, while migrants from higher latitudes make their appearance and remain with us throughout the winter. That this species is migratory in its habits is evident from the fact that numbers have been taken at remote lighthouses and lightships (Barrington).

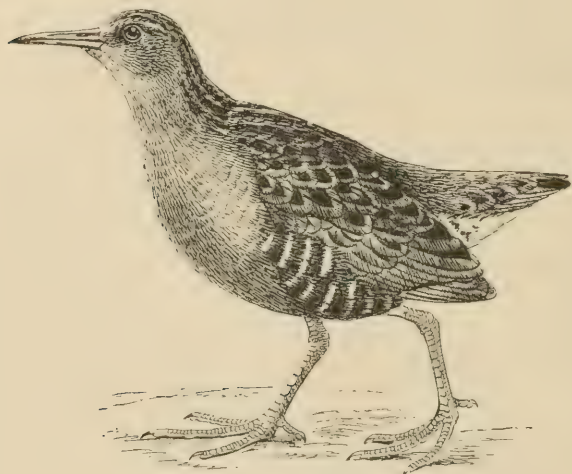


FIG. 22.—WATER-RAIL.

The Water-Rail is a much more plentiful British species than is popularly supposed, but it is often overlooked owing to its habits of skulking among thick aquatic vegetation on swampy and even shaly bog-land, which the most ardent snipe-shooter will hesitate before traversing, and also because of its strong disinclination to take wing when hunted. I have frequently shot it in frosty weather when it is driven to resort to more exposed situations, such as dry ditches, rough pasture-land, and along the margins of running streams. In hard weather I have seen a Water-Rail outwit a Cocker-spaniel which was on its track, by running along the

bank of a shallow trout-stream for about twenty yards until it reached the trunk of a sloping willow, which it ran up with all speed, not halting until it reached an outermost branch, on which it perched in safety. It is wonderful through what dense and tangled undergrowth a hunted Water-Rail can tread its way, the remarkably narrow breast and flanks being admirably adapted for such habits. It will also at times enter the water and swim to a place of safety.

Flight.—As in the case of the Corn-Crake, the wing power of the Water-Rail must not be judged by the heavy, short and reluctant flight of the bird when suddenly flushed from cover. As yet I have not met with it at sea, but judging from the extremely light weight of its body (five ounces being the average) compared with its size¹ and from the proportionate size and shape of the wings, I have no doubt that when on migration its flight is rapid and buoyant. Besides, it has frequently been killed when striking lanterns, stronger evidence still of the rapid rate at which it can fly.

Voice.—The ordinary voice, frequently heard during the breeding-season, is hoarse, though not loud. It has rather a croaking frog-like sound (Newton). But the call-note of the male is much louder and is produced with great suddenness. Mr. Ussher says, its “outbursts of hoarse cries are startling in summer, especially when a shot is fired: they give the idea that the bird is hit and screaming with pain, though often uttered without assignable cause. When not excited, the bird produces a sound like continued grunting and squealing, each grunt being prolonged and terminating in a squealing sound though the latter is not shrill like that of a pig.” Mr. Saunders syllables the voice as *cro-o-o-an*.

Food.—Vegetable substances, as well as worms, slugs, and small water-snails, constitute the diet.

Nest.—This species breeds on marshes, usually selecting a site where the soil is boggy and yielding. A favourite spot is in the midst of a dense bed of tall sedges, the nest being a little elevated on a tussock of such vegetation. The building-materials are reed and sedge-blades, with an admixture of a little grass. The nest is

¹ The Water-Rail is about one inch longer in the body than the Corn-Crake, though it weighs one and a-half to two ounces less. Its wings are, however, somewhat shorter in proportion.

always well hidden from view, and is often difficult of approach, owing to the soft nature of the surrounding quagmire.

The eggs, seven to eleven in number, are of a very pale buff, finely spotted and flecked with reddish-brown and grey, the specks being much more confined to the larger end than in the eggs of the Corn-Crake. Incubation begins about the end of April.

The Water-Rail breeds in most of the swamps of the British Isles. It is especially plentiful on the Norfolk 'Broads;' in Ireland, where the bird is not at all well-known, it is quite a common breeding-species.

Geographical distribution.—Abroad, it nests over a large area of the European Continent, including Iceland and the north of Norway. It occasionally wanders within the Arctic Circle, a specimen having been obtained as far north as Jan Mayen, on October 15th, 1882 (Saunders). It also breeds in Western and Central Asia, in North Africa, and when on migration in winter, it travels as far as Egypt and Abyssinia.

DESCRIPTIVE CHARACTERS.

PLUMAGE.¹ *Adult male nuptial.*—Top of head, back of neck, back, and wings, olive-brown with dark streaks; primaries, mouse-brown; cheeks, front and sides of neck, and breast, dull slate-grey; chin, light greyish; flanks, blackish, barred transversely with white; this barring is more noticeable than the brown and buff stripes on the flanks of the Corn-Crake; abdomen and under tail-coverts, light buff; tail, dusky-brown.

Adult female nuptial.—Similar to the male plumage but duller in colour; sometimes shows white bars on the wings.

Adult winter, male and female.—Resembles the nuptial plumages, but browner in shade, and the flanks and thighs are washed with fulvous-brown; throat, nearly white.

Immature, male and female.—The back and wings have

¹ *Note.*—Messrs. Williams and Son, of Dublin, record a specimen shot near the city of Dublin on November 13th, 1902, which was entirely black except the barred feathers on the sides and the under tail-coverts, which were dull white, beak and feet black, eyes, dark brown. Messrs. Williams and Son state that they have seen white and cream-coloured varieties, but the above is the first instance of melanism met with during thirty years' experience ('Zoologist,' 1902, p. 467).

a greener tint than those of the adult, and the breast and abdomen are of a dull, buffish-white; the throat is speckled and the flanks are barred with dark brown.

Nestling.—Covered with black down.

BEAK. Red, shading to brown.

FEET. Brownish.

IRIDES. Light brownish-red.

AVERAGE MEASUREMENTS.

TOTAL LENGTH.	...	...	...	11.5	in.
WING	...	...	...	4.75	„
BEAK	...	...	...	1.5	„
TARSO-METATARSUS	...	...	...	1.5	„
EGG	...	...	...	1.4	× 1 in.

Allied Species and Representative Forms.—*R. indicus* is the true Eastern representative, and *R. caerulescens* is the South African form.

WATER-HEN. *Gallinula chloropus* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 85; Dresser, 'Birds of Europe,' vol. vii, pl. 503; Lilford, 'Coloured Figures,' vol. iv, pl. 61.

The Water-hen or Moor-hen, is a plentiful and well-known species, resident in almost every district of the British Isles where marshes and reed-grown ponds exist. In some districts, especially where game is plentiful and sport active, its wary and sneaking habits recall those of the Crakes and Rails. On the contrary, we find the unmolested Water-hen exhibiting no mean amount of confidence in man's presence; swimming contentedly in the middle of a pond, and even landing in full view on the bank along which it gracefully wends its way. In captivity it grows so tame as almost to feed from the hand, and opportunity is thus afforded us of watching its movements closely. Unlike the Crakes, it migrates very little, though from lighthouses there are a few records. It also differs from the preceding species in that it is

diurnal in its habits, and so, instead of skulking, it may be seen moving actively about in the broad daylight.

The Water-hen soon gets accustomed to the sound of a passing train, from the windows of which scores of these birds may be seen feeding on the wet pastures or picking up objects from the surface of the water,¹ a few of the more timid members hastening on foot towards the shelter of a ditch. That it can dive is evident from the following habit described by Mr. Ussher: "two males will fight in the water by striking each other with the feet like game-cocks; their wings are then thrown back and their hinder parts immersed; the vanquished bird finally escapes

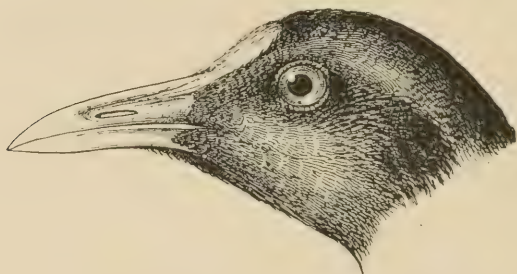


FIG. 23.—HEAD OF WATER-HEN. $\frac{1}{2}$ Nat. size.

by diving." When the stagnant waters are frost-bound, this species betakes itself to running streams, frequenting also the shelter of plantations and timbered districts.

Flight.—When necessity arises the bird can mount to a considerable height in the air, and then travel with sustained power and speed. Such aerial movements are chiefly conducted at night during migration. As evidence of the velocity with which the Water-hen can fly, I quote on the authority of Mr. R. M. Barrington that, "On October 28th, 1886, at 11.30, P.M., one struck "with tremendous force"

¹As the Water-hen swims it moves its body forwards with a series of jerks. Its long, slender toes, not connected by, or even fringed with, webs, offer but little resistance in the water. Hence to drive its body forwards it is obliged to move its feet very rapidly. This fact is easily verified by watching birds swim in captivity. Both when swimming and walking, this species may be seen constantly 'flirting' its tail up and down.

at Rathlin O'Birne on the West Coast" ('Migration of Birds at Irish Light Stations,' p. 194).

Voice.—Sometimes the Water-hen utters a harsh, one-syllabled note which sounds like *raik-raik-raik*. But most of us are more familiar with a pleasing and rather mellow rolling chirrup difficult to represent in syllables, but ending in the vowels *ĩ* and *õ*. The nearest rendering in syllables, that I can attempt is *prìò-prìò*, the consonant *r* being well rolled.

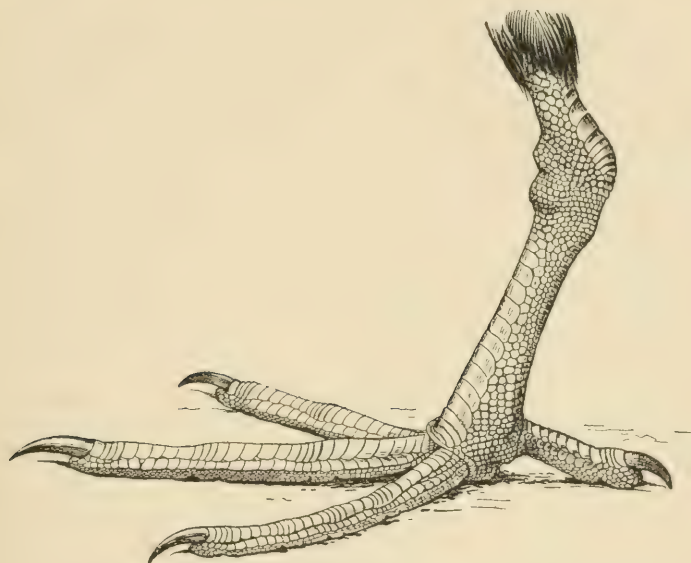


FIG. 24.—LEFT FOOT OF WATER-HEN. $\frac{3}{4}$ Nat. size.

Food.—The diet consists of vegetable substances, including grain, also insects, worms, slugs, and snails. Mr. Saunders accuses the bird of devouring the young of other Water-fowl.

Nest.—The Water-hen builds not only on the ground among tall sedges, but also on the branches of trees and bushes which overhang or skirt the water's edge. The foundation of the nest is generally composed of a mass of dry sedges, on the top of which, and interspersed between, are a number of dead leaves. Where sedges, reeds, and bulrushes are not available, we find this bird building with

leaves, small sticks, and even bits of paper: such nests I have examined on ornamental ponds. Well ambushed, and with the aid of a field-glass, I have watched Water-hens quit and return to their nest both before and after the young were hatched, and though I have seen them pluck the green leaves off trees and carry them to their nests, I have not as yet detected them covering either eggs or nestlings with such foliage. As far as I could observe the leaves were used to replace part of the lining of the nest, which in wet situations soon becomes sodden and uncomfortable from decomposition of the subjacent foundation. The eggs, seven to nine in number, are light buff, shading to warmer stone-colour, spotted with reddish-brown.

Incubation sometimes begins as early as the end of March, and during the breeding-season several broods are brought forth.¹

Geographical distribution.—Abroad, this species breeds throughout the greater part of Europe, except in the higher northern countries, also over the Asiatic and North African Continents and adjacent Islands.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, neck, and breast, dark greyish-black; abdomen, lighter grey; a few large white streaks on the flanks; back and wings, dark olive-brown; middle under tail-coverts, black; rest of under tail-coverts, white.

Adult female nuptial.—Similar to the male plumage, but the white streaks on the flanks are narrower.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Back and wings, greyish-brown; breast and abdomen, ash-grey; throat, whitish.

¹ On the ornamental waters of Weston Park, Sheffield, a Water-hen hatched out a brood as late as the last week in August, 1904. The nest was built on a clump of holly branches secured in the middle of the pond. It was most interesting to watch how, in the absence of the parents, one of the fully-fledged immature birds of an earlier brood would enter the nest and view with tender curiosity its baby brothers and sisters. Sometimes this bird would quit the nest before the return of one or both parents, but even when it remained there its presence was never objected to. In fact, at one time, I noted a united family consisting of both parents, a fully-grown immature bird and a brood of nestlings in the nest and two other immature birds swimming round it.

BEAK. Yellow towards the tip, and bright red at the base; 'frontal plate' same colour.

FEET. Greenish-yellow, with a red band just above the heel; toes, long and slender.

IRIDES. Bright reddish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	13	in.
WING	...	...	...	6.75	„
BEAK	...	...	...	1.5	„
TARSO-METATARSUS	...	...	...	1.75	„
EGG	...	...	...	1.65	× 1.2 in.

Allied Species and Representative Forms.—The Water-hen, which inhabits Madagascar and some of the adjacent Islands, is somewhat different from our own bird, while that found in the Tristan da Cunha group is a distinct species, called *G. nesiotis*. *G. galeata* is the American, and *G. sandvicensis* the Hawaiian Islands' representative. *G. tenebrosa*, without white streaks on the flanks, is the Australian bird (Saunders).

Note.—"The Purple Gallinule (*Porphyrio cærulens*), the Green-backed Gallinule (*P. smaragdonotus*), the Indian *P. poliocephalus* and the Australian *P. melanotus*, are frequently kept in semi-captivity, and individuals which have escaped, or which have been deliberately turned out, have from time to time been captured in our Islands. The bird from the south-west of Ireland recorded by Thompson as a "Martinique Gallinule," has proved to be *P. smaragdonotus*, but there is said to be a genuine example of the American species in Mr. Hart's Museum at Christchurch" (Saunders).

COOT. *Fulica atra* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 84; Dresser, 'Birds of Europe,' vol. vii, pl. 504; Lilford, 'Coloured Figures,' vol. iv, pl. 63.

The Coot, another familiar and common species in suitable localities in the British Isles, is even more strongly aquatic in its habits than the Water-hen. Unlike the

latter we do not find it lurking about damp ditches, moist pasture-lands, or hiding in a covert of brambles, for, even when suspicious of danger, it seldom quits the water. It prefers to take refuge among the tall sedges and other aquatic plants. Even when undisturbed it does not venture as a rule far from the water's edge, albeit it is active on foot and its gait, though slower than that of the Water-hen, is easy and graceful. Thus on land its movements are markedly different from those of the Ducks and other web-footed birds with which it often associates; but observed on the water at a short distance it might be mistaken for a dark-coloured Duck; for

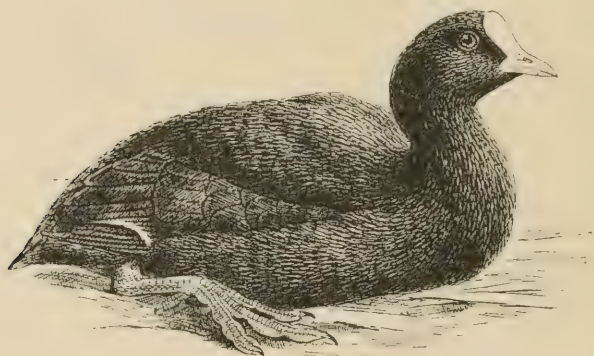


FIG. 25.—COOT.

unlike the Rails and Water-hen it is not narrow and gaunt-looking, but as it swims, which it does with no less ease and buoyancy than a Duck, its body appears full and rounded. The Coot is also a capable diver. Large ponds, lakes, and deep slow-flowing rivers, thickly fringed with reeds and bulrushes, are its favourite resorts; but in hard weather this species betakes itself to salt-water estuaries, where in company with sea-fowl, it may be seen congregated in hundreds. Flocks may also be observed on large sheets of inland water, such as the Norfolk 'Broads,' and Slapton Ley in Devon, where battue-shooting is still practised and large numbers killed. At their breeding-places, *e.g.*, on many of the large lakes of Ireland, Coots are also gregarious.

This bird is practically a resident in the British Isles, migrating in considerable numbers to marine localities in winter. In the Shetlands it appears to be chiefly a summer-visitor, while on Achill Island it occurs as a winter-visitor. It has been taken on several occasions at light-stations, which shows that it is capable of making long migratory journeys.

Flight.—The rising flight is fluttering and rather heavy, but as the bird gets up it becomes more buoyant and powerful on the wing. When flying, its feet extend beyond the tail.

Voice.—The shrill, menacing note of the Coot is familiar to most of us. On artificial waters and especially in the nesting-season, we hear its voice much more often than that of other water-fowl. It is hard to imitate, but may be compared rather to the short highly-pitched bark of quite a young puppy. The young bird, when more than half-grown but still in the downy stage, utters a note remarkably like that of the Curlew. I first became acquainted with this fact a few years ago when watching Coots on the lake of the Dublin Zoological Gardens. The warning-note of the parent sounds like a hammer striking a brick.

Food.—The food is practically the same as that of the Water-hen, while in captivity the bird will eat moistened bread and biscuits. It is most interesting to watch how a parent-bird will dip its beak into a piece of moist bread or mashed meal and again withdraw it without opening it. The beak covered with food is then presented to the brood, which crowd round to pick it off. The Coot feeds chiefly by day.

Nest.—This species constructs a strong nest of flags, reeds, and rushes, sometimes on a bank near the water's edge, more usually in a bed of reeds surrounded by water, above the level of which it is well raised. It is as a rule concealed from view by the surrounding vegetation. The eggs, seven to ten in number, are stone-colour, with small specks of blackish-brown.

Incubation sometimes takes place early in April, but on the lakes in the West of Ireland in May and June. The young take to the water a few days after they are hatched, when their parents watch them assiduously, and will attack and drive away other species of Water-fowl much larger than themselves.

Geographical distribution.—Abroad, the Coot breeds over the greater part of Europe and Temperate Asia, as far east

as China and Japan. In winter, it is abundant in India, North Africa, and the adjacent Islands.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Back of the neck, back, wings, dark slate-grey; throat, breast, abdomen, and flanks, dull black; wings crossed by a narrow white bar.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Breast and abdomen, greyish; throat, impure white.

Nestling.—Jet-black, with orange-red head varied with purple-blue.

BEAK. Pale pinkish-white; the tip ivory-white; 'frontal plate,' also white, with a smooth surface like polished ivory.

FEET. Greenish; toes fringed on either side with a series of membranous lobes; such a form of foot being of great use when the bird is treading its way through reeds and sinking ooze, as well as when swimming.

IRIDES. Bright crimson.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	15	in.
WING	...	...	...	8.5	„
BEAK	...	...	...	1.5	„
TARSO-METATARSUS	...	...	...	1.3	„
EGG	...	...	...	2 × 1.5	in.

Allied Species and Representative Forms.—*F. cristata* is the African representative. It has two bright red caruncles on the 'frontal plate.'

The North American Coot differs from our bird only in having a large amount of white under the tail. However, our identical bird has once reached Greenland (Saunders).

Sub-Order—GRUES.

Family—GRUIDÆ.

CRANE. *Grus communis* (Bechstein).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 19; Dresser, 'Birds of Europe,' vol. vii, p. 505; Lilford, 'Coloured Figures,' vol. iv, pl. 64.

In days gone by the Crane¹ was a fairly common species in parts of the British Isles. At the present time it is a scarce and an irregular visitor to England. Among recent records of its occurrence may be mentioned:—One from Flamborough, February, 1892; and one near Lowestoft, June, 1893 (Harting, 'Handbook Brit. Birds,' 1901, p. 157).

In Scotland this species is very rare.

In Ireland there have been only nine or ten occurrences within the last hundred years. Of these the most recent records are:—An adult male shot near Thurles, co. Tipperary, about September 3rd, 1896 (W. Johnston, 'Irish Naturalist,' 1898, p. 51), and another male shot on Inch Slobs, Lough Swilly, co. Donegal, on June 23rd, 1896 (D. C. Campbell, 'Irish Naturalist,' 1896, p. 214).

The remaining counties from which birds have been recorded are:—Kerry, Cork, Galway, Mayo, Down. In Kerry and Cork several Cranes were met with in October and November, 1851 (Proc. Dub. Nat. Hist. Soc., December, 1851).

With reference to the Crane as a British bird in the past, Mr. Harting states that "In the time of King John

¹ The term 'Crane' is still used, especially among country-folk, to denote the Common Heron. Many of the older writers, when speaking of the abundance of the Crane in Britain, may have meant the Common Heron.

this bird was sufficiently common in Cambridgeshire and Lincolnshire for the king to capture as many as seven and nine in one day with gerfalcons".

Turner, in his *Avium Historia*, 1544, states that he had often seen the young ones—in *locis palustribus earum pipiones sapissime vidi*. Leslie also in 1578, wrote of this bird as being common (*Grues plurimæ*) in Scotland (*De origine moribus et rebus gestis Scotorum*, p. 25) ('Handbook of Brit. Birds,' 1901, pp. 155, 156.)

"It has been believed" writes Mr. Ussher, "that the Crane was common in Ireland in the twelfth century, from the statement by Giraldus de Barri (Cambrensis) that a hundred of these birds (*Grues*) might then be seen in a flock, and his chapter on the Crane in the British Museum MS. is illustrated with an unmistakable coloured figure; Higden also, in the fourteenth century, stated that Ireland abounded in Eagles, Cranes, Peacocks (*Capercaillies?*), Quails, Hawkes, and Falcons. We cannot, however, be sure that these ancient writers did not confound the Heron with the Crane, as is done at the present day; "Crane" being the name by which the Heron is generally known in Ireland." During the seventeenth and eighteenth centuries, Cranes visited the British Isles regularly in winter, but for over a hundred years this species has ceased to be enumerated among our annual winter-migrants.

The Crane is a very striking-looking figure: it is the largest of wading-birds, standing upwards of four feet high.

Flight.—Watching the bird stalking about in a slow and dignified manner one would hardly credit it with the power of taking immense flights. But to quote Prof. Newton's words, "The Crane's aerial journeys are of a very extended kind; and on its way from beyond the borders of the Tropic of Cancer to within the Arctic Circle, or on the return-voyage, its flocks may be described passing overhead at a marvellous height, or halting for rest and refreshment on the wide meadows that border some great river, while the seeming order with which its ranks are marshalled during flight has long attracted attention" (Dict. Birds, p. 110).

Voice.—Unlike the Storks, the Crane is capable of producing a remarkably full-toned trumpet-like blast. This is uttered both when the bird is flying and on the ground. I have frequently heard it from birds in captivity in early spring, and have noted that the mouth is kept open during the vibrations caused by several successive notes.

Food.—The Crane eats grain, insects, small birds, and mammals. Mr. Saunders also mentions the tuber of the sweet potato and water-melons.

Nest.—This species builds on marshy ground. The eggs are greyish-brown with dark brown blotches and spots: two constitute the clutch. Incubation begins in April or May.

This noble bird bred in the fens and marshes of East Anglia until 1590 (Saunders). It is of considerable interest to note that for several centuries, the bird and its eggs were protected by law, and in 1780 it was decreed in the Fen Laws that "no person should take any Swans' eggs or Cranes' egg, or young birds of that kind, on pain of forfeiting for every offence 3s. 4d.," "but," says Prof. Newton, "this was most likely but the formal repetition of an older edict; for in 1768 Pennant wrote that after the strictest enquiry he found the inhabitants of those counties to be wholly unacquainted with the bird, and hence concluded that it had forsaken our island."

Geographical distribution.—On its northern migration the Crane reaches as far as Swedish and Finnish Lapland. In these countries it breeds, but it also halts in great numbers in Central and Southern Europe to take up its breeding-quarters in spring. In summer it migrates eastward over the Asiatic Continent up to lat. 65° N. Its winters are spent in Central Africa, India, China, Japan and other warm countries.

DESCRIPTIVE CHARACTERS.

PLUMAGE. Adult male nuptial.—General colour, slate-grey, with darker striping down the front of the throat; inner secondaries form a bunch of long downward-curved blue-black plumes which sweep over the tail.

Adult female nuptial.—Lighter in colour than the male.

Adult winter, male and female.—Resembles the nuptial plumage.

Immature, male and female.—Back and wings, greyish-brown, the feathers being edged with a fulvous shade; top of head and back of neck, rusty-brown; wing-plumes, very short.

BEAK. Greyish-green, with a little red near the base.

FEET. Blackish-grey.

IRIDES. Reddish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	45 in.	Female smaller.
WING	...	...	21 "	
BEAK	...	...	4·25 in	
TARSO-METATARSUS	...	...	9·6 "	
EGG	...	...	3·8 × 2·6 in.	

Note.—A male example of the Demoiselle Crane, *Grus virgo*, is said to have been shot at Deerness, East Mainland, Orkney, on May 14th 1863, a companion bird being pursued, but not obtained (Zool., p. 8692). This inhabitant of Africa, Asia, and the south of Europe, has wandered as far north as Sweden and Heligoland; it is also frequently kept in confinement. An African Crowned Crane, *Balea-rica pavonina*, was mobbed to death by the populace on the Sabbath-day, September 17th 1871, near Dalry in Ayrshire" (Saunders).

Sub-Order OTIDES.

Family OTIDIDÆ.

GREAT BUSTARD. *Otis tarda* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 17; Dresser, 'Birds of Europe,' vol. vii, pl. 508; Lilford, 'Coloured Figures,' vol. v, pl. 1.

This magnificent bird, indigenous and plentiful in parts of England until a comparatively recent date, is at the present day only an occasional wanderer, chiefly in winter. Its visits are irregular, and the numbers which appear fluctuate considerably. Thus in 1890-91 quite a visitation of Bustards took place, and specimens were obtained from Norfolk, Sussex, Essex, Wiltshire, Hampshire, and Carmarthenshire, ('Field,' February 28th, 1891). Other examples have been recorded of recent years as follows: One from Costessy, Norfolk, February 1st, 1894; one from Market Lavington (Wiltshire Downs), October, 1897 (Harting); two from Jersey in December, 1899 (H. MacKay, 'Zoologist,' 1904, p. 378); two from North-east Lincolnshire in 1902, viz., one from Weelsby, December 8th, and another from Tetney cow-marsh, December 29th (G. H. Caton Haigh, 'Zoologist,' 1903, p. 368).

In Scotland, this species has now become very rare; one was procured from the Orkneys on March 29th, 1876, before which time the bird was unknown in those Islands ('Field,' April 8th and 15th, 1876).

It is difficult to say whether the Great Bustard is yet to be included in the Irish List. Messrs. Ussher and Warren have not included it in their recent work on 'The Birds of Ireland' (though mentioned by Smith among the birds of Cork); however, in December, 1902, a Great Bustard was shot, and another was seen in the same place

in Tipperary. With regard to these occurrences, Messrs. Williams and Son published a paragraph in the 'Zoologist,' 1903, p. 153-4, which has been criticised in the pages of the 'Irish Naturalist,' 1903, p. 198. To the criticisms Messrs. Williams and Son reply on p. 248 of the same Journal.

The first note reads:—

GREAT BUSTARD IN IRELAND.

"Two large birds were observed frequenting some fields near Thurles, co. Tipperary, during the month of December, 1902. On the 20th one fell to the gun of a farmer's son, who thought it was a Wild Goose; it was sent to us for identification, and proved to be a female Great Bustard in excellent plumage. Its stomach contained turnip-tops. This, we believe, is the first record of this species in Ireland. The gentleman who turned down the Great Bustards in Norfolk has carefully examined the specimen, but cannot identify it as one of his birds."

Criticism: "Messrs. Williams and Son record in the *Zoologist* for April the occurrence of two Great Bustards in co. Tipperary in December last year, one being shot. But the recent liberation of a number of Great Bustards in Norfolk seriously affects the value of what would otherwise be a new record for Ireland. To put it mildly, it is a singular coincidence that the *first* appearance of the species in Ireland should so closely follow its deliberate introduction into England."

(The writer of this criticism does not give his name.)

Reply: "In the *Irish Naturalist* for July (p. 198 *supra*), we see a paragraph casting doubt on the Great Bustard shot in Tipperary being a genuine wild bird. We received the same week in December a very fine specimen from Glamorganshire. As two years have elapsed since the fifteen Great Bustards were liberated in Norfolk, and in a recent number of the *Field* every single liberated bird has been accounted for, we may safely conclude that the Irish specimen has not had an assisted passage; we may also remark that both specimens, Irish and Welsh, have been carefully examined by the gentleman who brought the birds to Norfolk, and his conclusion was that they were *bonâ-fide* travellers. Of course there will always be a certain amount of doubt when there is only one occurrence of a species in a locality, but in

this instance the two birds were seen for some weeks, and the bird was shot in Wales in the same week in which the Irish specimen was obtained. We cannot find any account of the species having been turned down in Ireland, as was the case with the Tawny Owl obtained in the North of Ireland."

While agreeing with Messrs. Williams and Son, it seems to be difficult to determine whether the birds in question



FIG. 26.—GREAT BUSTARD.

had only crossed from England, having tarried there for a considerable time after liberation, or had reached Ireland as genuine migrants. It is a matter for regret that birds like Bustards, which at intervals are 'turned down' in England, are not first properly marked. There is an objection to putting metal rings, &c., round the legs, as they may get detached, to say nothing of the discomfort which they might cause to the wearer. When liberating Bustards it is quite possible to brand them first: a small

area of the skin might be tattooed with a dark indelible pigment. This may be done very conveniently on one of the bare areas of skin (*apteria*), *i.e.*, between the tracts along which the feathers grow (*pteryle*). I have successfully tattooed homing-pigeons, only very few feathers being lost by this treatment.

Though male Bustards, like Ruffs, fight savagely to gain possession of the females, it still remains uncertain whether they are truly polygamous. One thing is certain, namely, that when their consorts are hatching they leave them and assemble in small companies.

The remarkable posture which the male assumes during his ardent fits of courtship is best understood by a reference to an excellent illustration by Wolf ('Zoological Sketches,' pl. 45). Suffice it to mention that the erected tail, the retracted head and neck, and much distended throat, are almost hidden from view among the short and elevated feathers of the drooping wings.

Flight.—Except in late spring (end of May and early June), when the Bustard loses its flight-feathers and cannot rise, it is strong and swift on the wing and readily escapes danger by flying rather than running.

Voice.—The voice is soft and has been compared to the cooing of a pigeon.

Food.—Grain forms the staple diet, but worms, field-mice, and frogs, are not discarded.

From the days of Xenophon the flesh of the Bustard has been esteemed a delicacy (*Anab. I., v.*) (Newton).

Nest.—The nest is simply a hollow scraped in the soil; the eggs, two to three in number, are olive-green, blotched with brown. Incubation begins in April or May. The Great Bustard remained indigenous in England for a much longer period than in Scotland. It bred in small numbers on the Plains of Berwickshire and East Lothian until 1526, while in England the last eggs were taken in Norfolk and Suffolk about 1838. Formerly this fine bird bred in Berkshire, Hertfordshire, the Wolds of Lincolnshire and the Downs of Sussex, Salisbury Plain, and the Eastern Wolds of Yorkshire.

Geographical distribution.—Abroad, this species breeds in Southern Europe, especially in the vicinity of the Danube and Black Sea, in Spain, and in Germany; in countries further north it is only a wanderer. It also breeds on the Steppes of Asia and can be traced to Western China, but in North Africa it is uncommon.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head, bluish-grey; just below the base of the lower segment of the beak there is a tuft of long, thin, white bristle-like feathers, which grow downwards on either side of the throat;¹ back and scapulars, rich yellowish-buff, barred with black; wing-coverts, white; primaries, brownish; tail, yellowish-brown, barred with black, and edged with white; breast, banded with rich reddish-brown and grey; abdomen, white.

Adult female nuptial.—Resembles the male plumage, but the face-bristles are absent, and the breast is not banded.

Adult winter, male and female.—Resembles the respective nuptial plumages.

Immature, male and female.—Resembles the adult female plumage.

BEAK. Lead-grey, shading to horn-colour, blackish at the tip.

FEET. Light brown.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	43 in.	Female often only 30 in.
WING	24 „	„ 19 „
BEAK	2 „	
TARSO-METATARSUS	6 „	
EGG	3 × 2.1 in.	

Allied Species and Representative Forms.—*O. dybowskii* is the true Eastern representative.

LITTLE BUSTARD. *Otis tetrax* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 18; Dresser, 'Birds of Europe,' vol vii, pl. 509; Lilford, 'Coloured Figures,' vol. v, pl. 2.

In the south and east of England and as far north as Yorkshire, there are several occurrences of the Little

¹ The males have a large air-pouch in the throat which is capable of great distention in the mating-season.

Bustard on record, but elsewhere in the British Isles it must be regarded as a very rare and an accidental visitor. The majority of birds have been taken in winter. Mr. Harting states that up to the year 1872 over forty instances were known to him, and subsequently he has recorded many more. Among recent captures may be mentioned :— One taken in Hastings, Sussex, on December 23rd, 1900 (G. W. Bradshaw, 'Zoologist,' 1901, p. 428) ; another shot in the same county on December 16th of the following year (W. P. Westell, 'Zoologist,' 1902, p. 70) ; while on May 14th, 1901, a Little Bustard was shot in North Derbyshire, the second from that county (W. Storrs Fox, 'Zoologist,' 1901, p. 270) ; and on February 4th, 1902, a specimen was obtained in Jersey (H. Mackay, 'Zoologist,' 1904, p. 378).

The Little Bustard has been obtained four times in Scotland and six times in Ireland, as follows :—

Scotland.—One near Montrose, December, 1833 ; one near St. Andrews, March 6th, 1840 ; one at Halkirk, Caithness, June, 1848 ; and the fourth at Westfield, near Elgin, February 8th, 1861 (Harting).

Ireland.—One on Killough Bog, in co. Wicklow, August 23rd, 1833 ; another accompanied it but escaped being shot ; one on Ballycottin Bay, co. Cork, December 24th, 1860 ; one on Youghal Bay in the same county, November 14th, 1883 ; one "sent to the Dublin Market in a package of game from co. Longford," February 13th, 1883 ; two seen and one secured near Belmullet, co. Mayo, December, 1887 ; this specimen is preserved in the Dublin Museum ; one near Ballybunion, co. Kerry, December 30th, 1892 (Ussher).

In its general habits the Little Bustard resembles its larger relative, but differs in that the males do not assemble in packs when the females are hatching, each keeping near its own particular mate.

Flight.—Like the Great Bustard, this species is strong on the wing, and when suddenly surprised will rise with a clattering noise, flying off with immense velocity.

Voice.—The peculiar note of the male heard in the breeding-season sounds like *prut-prut*. When uttering the cry the bird assumes a characteristic attitude. Its head and neck are well thrown back between the shoulders, the wings are partly extended, and the tail is held erect. Moreover, the bird has a strange habit of suddenly jumping up after each call "striking the ground in a peculiar manner on his descent" (Saunders). In the spring-season the throat is

much dilated, and at this time of year the male remains about the same spot for many hours in the day.

Food.—Grain is consumed in large quantities, while small mammals, frogs, slugs, snails, and insects, are also eaten.

Nest.—The nest of dry grass is built on the ground in places where the vegetation is tall enough to cover the sitting-bird. The eggs, numbering three to four in the clutch, are greenish-brown in ground-colour, with darker patches, and often zoned with reddish-brown or rufous. Incubation usually begins towards the end of May.

The males fight to gain the possession of the females, and after breeding, the birds form large packs which, as winter approaches, break up into smaller parties.

Unlike the Great Bustard, the Little Bustard has never been known to breed in the British Isles.

Geographical distribution.—This is a south-eastern species, breeding in many countries of Southern Europe, also in Asia and North Africa. On migration it has been recorded from Norway and Sweden, while in Germany it occurs chiefly as a winter-visitor. It also migrates in winter to North-western India.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, back, and scapulars, rather light brown, streaked profusely with fine black lines; wing-coverts, breast, and abdomen, white; cheeks and throat, grey; neck, black, interrupted by a white U-shaped loop above, and a collar of white below.

Adult female nuptial.—Feathers of the neck and breast, brown, finely marked with black; back and wings, strongly marked with black streaks.

Adult winter, male and female.—Somewhat resembles the female nuptial plumage.

Immature, male and female.—Somewhat resembles the adult winter plumage.

BEAK. Horn-grey, black at the tip; base of lower segment yellowish.

FEET. Dull ochre-yellow.

IRIDES. Dull yellowish-brown shading to reddish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	17	in.
WING	...	...	...	9.5	„
BEAK	...	...	...	1.1	„
TARSO-METATARSUS	...	...	...	2.5	„
EGG	...	...	...	1.95	× 1.5 in.

MACQUEEN'S BUSTARD. *Otis macqueeni* (J. E. Gray).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. vii, pl. 511; Lilford, 'Coloured Figures,' vol. v, pl. 3.

Four instances only of this Oriental species are known to have occurred in our Isles. Those, from eastern counties of England, are as follows:—One taken near Kirton-in-Lindsey, Lincolnshire, in October, 1847, and preserved in the Museum of the Philosophical Society of York. A second, an adult male, obtained near Redcar, on October 5th 1892, and preserved in the Newcastle Museum. A third taken near Holderness, on October 17th, 1896 (Saunders).

In addition to these records, Mr. W. Eagle Clarke, in the Ann. Scot. Nat. Hist. (1899, p. 78), mentions a Macqueen's Bustard obtained in Pitfour, Aberdeenshire, on October 24th, 1898. (*Vide* also Bull. B.O.C., No. lv.)

This bird has on several occasions wandered to Germany and other countries of Central Europe.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Feathers of the back of the head elongated into a white crest tipped with black, the ruff on the sides of the neck being, for the most part, of the same colour; back and wings, buff, finely streaked, freckled, and vermiculated with black; tail, tinged with light reddish-brown, banded with three black bars and tipped with white; throat, pale grey with fine black frecklings; upper part of breast, bluish-grey, lower part and abdomen, white.

Adult female nuptial.—Lighter in colour than the male plumage, with shorter crest and ruff; frecklings on the lower part of throat and fore-neck coarser than those of the male.

Adult winter, male and female.—Somewhat resembles the female nuptial plumage.

Immature, male and female.—Resembles the adult female plumage, but can be distinguished by the buff-coloured 'arrow-headed' markings of the back and wings.

BEAK. Upper segment, chiefly dusky bluish-black; lower segment, paler or greenish.

FEET. Pale yellow.

IRIDES. Pale shading to bright yellow.

EGGS. Rather resemble those of the Great Bustard but

the ground-colour shows less of a greenish shade : clutch, three.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	28	in.
WING	...	...	...	15·5	„
BEAK	...	...	...	1·8	„
TARSO-METATARSUS	...	...	...	4·9	„
EGG	...	...	...	2·55	× 1·7 in.

Allied Species and Representative Forms.:—"In the African Ruffed Bustard, *O. undulata*, the ground-colour is more rufous, the vermiculations are coarser, the tail is broadly crossed with five dark bars, and the elongated feathers of the crest and lower throat are white. The latter species occurs on Lanzarote, the nearest of the Canary Islands to Africa" (Saunders).

Order LIMICOLÆ.

Family ŒDICNEMIDÆ.

GREAT PLOVER.¹ (*Edicnemus scolopax* (S. G. Gmelin).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 35; Dresser, 'Birds of Europe,' vol. vii, pl. 512; Lilford, 'Coloured Figures,' vol. v, pl. 4; Booth, 'Rough Notes,' vol. iii, pl. 13.

The name 'Norfolk Plover' has also been given to this species, owing to the fact that it annually resorts to the dry sandy flats and heaths of the maritime counties of South-eastern England, especially Norfolk. Southward, as far as Dorset, it may be regarded as a regular summer-visitor, occurring only in limited numbers. Elsewhere in the British Isles the Great Plover is rare.

Two examples have been recorded from Scotland; namely, a bird obtained close to St. Andrews, in January, 1858, and another procured in Dumbartonshire, in August, 1897 (Saunders).

Ireland has yielded about eleven specimens, nine of which were taken on the east coast. The most recent record is that of a bird obtained in co. Donegal on October 12th, 1903 (D. C. Campbell, 'Irish Naturalist,' 1904, p. 119). The other counties from which the bird has been obtained and the dates of capture are as follows:—

Dublin:—One, January 27th, 1829, the earliest record (Thompson); another, 1849 (Kinahan, Proc. Dub. Univ. Zool. Soc., 1854); a third, 1853 (Kinahan, Proc. Dub. Nat. Hist. Soc., 1860); a fourth, January 4th, 1868 (Blake-Knox, 'Zoologist,' 1868); a fifth, December 3rd, 1884 (More, 'List of Irish Birds'); this specimen is preserved in the Dublin Museum.

¹ Also known as the Stone-Curlew.

Wexford :—One, early in December, 1844 (Poole, 'Zoologist,' 1845).

Waterford :—One, March 1st, 1840 (Thompson).

Antrim :—One near Belfast (Ussher, 'Birds of Ireland'); this specimen is preserved in the Belfast Museum.

Clare :—A specimen said to have been shot in this county in the autumn of 1844; the evidence of this record rests on a somewhat shaky basis (Ussher, 'Birds of Ireland,' p. 249, also Watters, 'Birds of Ireland,' p. 172).



FIG. 27.—GREAT PLOVER.

It may be seen from the above that there have been several occurrences in winter. To these I may add the following note :—On December 10th, 1900, while I was engaged watching the movements of a great flock of Golden Plover, my attention was attracted by a larger and lighter-coloured bird, which was standing at the edge of the flock. The bird, undoubtedly a Great Plover, appeared very wild, and was anxiously watching my advances. As I viewed it with a field-glass at a distance of some two hundred yards, its immense and prominent orange-coloured eyes were plainly

discernible. As I endeavoured to draw closer it rose, and flying off, startled the flock of Golden Plover which then joined it on the wing.

Sometimes, however, the Great Plover is easily approached and will run rather than fly when pursued.

Though essentially a summer-migrant, arriving about April and departing in October, yet several stragglers have been known to remain until December or January, especially in Cornwall, and, to a less extent, in other parts of the south of England. A few of these birds may have crossed over to the east side of Ireland, and this would account for their appearance in that country in midwinter.

Voice.—The voice is rather whistling in character, and is best heard on moon-lit nights; during the day this species is, as a rule, silent.

Food.—The Great Plover feeds chiefly on nocturnal beetles, captured during and after dusk. In the gizzard of an immature bird, taken at Retford on October 10th, 1904, and sent me by the Rev. Julian Tuck, I found quantities of ear-wigs' forceps; the rest of the insects having been nearly digested. I also found pebbles 4 mm. in size and green vegetable-matter present. Various species of small reptiles, frogs, small mammals, worms and slugs, are also eaten.

Nest.—This bird forms its nesting-place by scraping a hollow in sandy soil, or among loose stones or shingle. The eggs, two in number, are light brown, spotted and streaked with grey, dark brown, and several intermediate shades.

In addition to the counties of South-eastern England, where this species breeds, the nest has been found in the Midlands, Worcestershire, Lincolnshire and East Yorkshire; but west of Hereford the bird is almost unknown (Saunders).

Geographical distribution.—Abroad, the Great Plover breeds in Temperate Europe and Asia, while in Southern Europe and in Northern Africa it is resident to a large extent. Further south it can be traced to India and Ceylon.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, back of neck, back, scapulars, wings, and rump, light brown, with darker streaks; across the wings are two thin white bars; primaries, dark brownish-black; tail, tipped with black, and barred above with greyish-white, light and dark brown;

chin, throat, and a streak on the cheek below the eye, white; rest of neck, and breast, light cinnamon-colour, streaked with brownish-black; upper abdomen, light buff, streaked with brownish-black; lower abdomen, white; under tail-coverts, rich reddish-buff.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female. — Similar to the adult plumage, but duller in shade.

BEAK. Basal half, yellow; distal half, black.

FEET. Yellow.

IRIDES. Bright golden-yellow.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	16	in.
WING	...	...	...	9·25	„
BEAK	...	...	...	1·5	„
TARSO-METATARSUS	...	...	...	3·2	„
EGG	...	...	...	2·1 × 1·5	in.

Allied Species and Representative Forms.—*Æ. capensis* is the South African form, while *Æ. affinis*, a Tropical representative, is found in Somaliland (Saunders).

Family GLAREOLIDÆ.

PRATINCOLE. *Glarcola pratincola* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 46; Dresser, 'Birds of Europe,' vol. vii, pl. 513; Lilford, 'Coloured Figures,' vol. v, pl. 5.

The Pratincole visits Southern Europe in summer, but can be regarded only as a rare wanderer to Britain during the spring and autumn migrations. It was first noted in 1807, in Lancashire and Cumberland. Subsequently, it has been obtained in Norfolk, Essex, Lincolnshire, Cambridgeshire, Yorkshire; it has visited Surrey, Hampshire, Dorset, Wiltshire, Somerset, Devon, Cornwall, and Breconshire (Saunders).

Two examples have been procured in Scotland, one at Unst in the Shetlands, August 16th, 1812; the other at Montrose in Forfarshire, November 4th, 1899 (Harvie-Brown, Ann. Scot. Nat. Hist., 1900). This appears to be the most recent capture known.

From Ireland there is but one record of its occurrence, viz., in co. Cork previous to 1844 (Ussher, 'Birds of Ireland,' p. 249).

The Pratincole can be distinguished from other small shore-birds by its forked tail. In most wading-birds the middle feathers of the tail are longer than the lateral ones. In the Pratincole this arrangement is reversed.

Like its near allies the Plovers, the Pratincole can run rapidly; when at rest it has the peculiar habit of jerking its tail up and down.

Flight.—The wings are long and pointed, and well adapted for swift and sustained flight; Degland compares the aerial movements of this species to those of the Swallow.

Food.—This bird is mainly insectivorous; it lives chiefly

on beetles, and grasshoppers are also eaten. In the stomachs of two specimens (a male and a female) shot in May, 1827, on Breydon Wall, Messrs. Paget found quantities of beetles (A. Patterson, 'Zoologist,' 1901, p. 98).

Voice.—The voice is loud and scolding, not unlike that of the larger species of Terns:

Nest.—The Pratincole lays on the bare ground, "on the sun-dried mud which has been covered with water during the rains of winter;" . . . "the eggs, two to three in

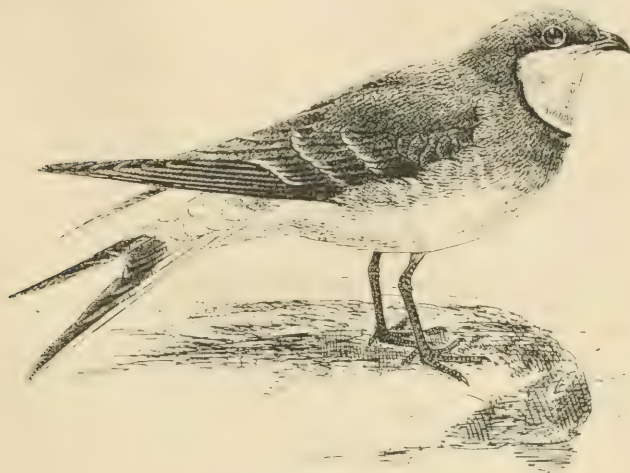


FIG. 28.—PRATINCOLE.

number, are laid with their axes parallel." They are of a buffish-grey colour, blotched and zoned with black and purple-brown. Incubation begins early in May (Saunders).

Geographical distribution.—This species breeds in North Africa, Southern Europe, and Western Asia, migrating in winter to Southern Asia and Africa. On passage north comparatively few birds reach a higher latitude than that of France.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, hind-neck, back, scapulars, and wings, brown; some of the secondaries are edged with white; primaries, dark brown; tail, dark brown, with the bases of the feathers white; upper tail-

coverts, tipped with white; throat, dull yellow, limited below by a thin, black 'horse shoe'; front of neck and breast, yellowish-brown; abdomen, white; axillaries, reddish-brown.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Back and wings, mottled and striped transversely with black and grey; breast, streaked with brown.

BEAK. Dark brown, red at the base behind the nostrils.

FEET. Black.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	10·5 in.
WING ... ..	...	7·5 ,,
BEAK ... ..	...	0·8 ,,
TARSO-METATARSUS	...	1·25 ,,
EGG ... ..	...	1·15 × 0·9 in.

Allied Species and Representative Forms.—*G. melanoptera*, with black under wing-coverts and axillaries, and no white wing-bar, inhabits Asia as well as Southern Russia, reaching South Africa in winter.

CREAM-COLOURED COURSER. *Cursorius gallicus*

(J. F. Gmelin).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 44; Dresser, 'Birds of Europe,' vol. vii, pl. 514; Lilford, 'Coloured Figures,' vol. v, pl. 6.

The Cream-coloured Courser is another rare wanderer to British shores from its home in Northern Africa and Southern Asia.

In England it has visited the following counties as a migrant in autumn or winter:—Kent, Middlesex, Suffolk, Norfolk, Lincolnshire, Yorkshire, Northumberland, Cumber-

land, Leicestershire, Cornwall, Devon, Somerset, Dorset, Wilts, and Hants. It has also visited North Wales and Cardiganshire. It may be noticed that the above counties are maritime, with the exception of Wilts, Leicestershire, and Middlesex.

A bird from Kent about 1787 (Harting, 'Handbook of British Birds,' 1901, p. 410), and a bird from North Wales in 1793, are probably the earliest captures recorded. The



FIG. 29.—CREAM-COLOURED COURSER.

most recent occurrences appear to be those of two specimens, one obtained in Wiltshire, on October 10th, and another in Jersey, on October 19th, 1896.

The Cream-coloured Courser has not been recorded as a spring-migrant on its passage northward.

In Scotland it has once been obtained, namely in Lanarkshire, on October 8th, 1868 (Gray, 'Birds of the West of Scotland,' p. 250).

As yet it has not been included in the Irish List.

The bird bears some resemblance to the Bustards: it is strongly built, and is less graceful and active in its movements than the typical wading-birds.

Flight.—The flight is strong and swift.

Food.—Insects and small shell-fish form the main diet.

Voice.—The note of the female is syllabled *rererer* (Favier).

Nest.—This bird lays on desert sands and on stony wastes. The eggs,¹ two in number, are light buff, spotted and marbled with shades of brown and deep grey.

Incubation probably commences in March.

Geographical distribution.—The Cream-coloured Courser breeds in Northern Africa, and is abundant on some of the Canary Islands. Eastward it can be traced across the Red Sea through Arabia to North India. Its visits to Southern Europe are irregular, and to latitudes north of France it is only a straggler.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, buffish-grey, shading to slate-colour; feathers of the back of the neck, margined with black; a narrow white stripe extends from the eye to the neck, below which is a black stripe; back, wings, rump, and tail, sandy-buff; primaries, axillaries, and under wing-coverts, black; breast and abdomen, pale greyish-buff, shading to white; under tail-coverts, white.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—More rufous than the adult; no grey or black on the back of the neck; eye-stripe, yellowish; feathers of the throat and back, edged with dark crescentic markings.

BEAK. Dark brown.

FEET. Greyish.

IRIDES. Hazel.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	10	in.
WING	...	...	...	6.3	„
BEAK	...	...	...	1	„
TARSO-METATARSUS	...	...	...	2.25	„
EGG	...	...	...	1.35	× 1.1 in.

¹ The first eggs on record were obtained by the late Canon Tristram ('Ibis,' 1859).

Family CHARADRIIDÆ.

DOTTEREL. *Eudromias morinellus* (Linnæus).

Coloured Figures.—Gould, ‘Birds of Great Britain,’ vol. iv, pl. 43; Dresser, ‘Birds of Europe,’ vol. vii, pl. 526; Lilford, ‘Coloured Figures,’ vol. v, pl. 8; Booth, ‘Rough Notes,’ vol. iii, pl. 14.

Within the past half century the Dotterel has become greatly diminished in numbers as a British bird: nowadays visitations of large flocks are unknown. The gunner has sensibly contributed to the thinning out of the numbers, an easily accomplished feat, seeing that the Dotterel is little heedful of danger. So tame—even stupid—is this bird that it can be approached on an open field within easy gun-shot range, and when assembled into flocks, large numbers can be killed with a few shots. Owing to the palatable nature of its flesh, as well as to its handsome plumage, it has become a special victim to gun and net.

Grass-covered fields, stubbles, and rough uncultivated commons are its favourite resorts; it also occurs about the sand-hills and mud-flats of our coasts. The Dotterel is a summer-visitor to Britain, making its appearance about the end of April and departing early in September.

On migration it is distributed on both sides of the English coast, though very local in its breeding-resorts. It is rare along the western sea-board of Scotland, including the Hebrides, and in Wales and Ireland it is seldom obtained. In the latter country, Mr. Ussher mentions twelve occurrences which, with the exception of one, took place during the autumn migration. The following counties have been visited:—Cork, Waterford, Tipperary, Down, Antrim, Londonderry, and Donegal. The most recent record is that of a bird obtained on November 30th, 1905,

on a mud-flat in Donegal Bay (H. R. Nichols, 'Irish Naturalist,' 1906, p. 45).

Food.—The food consists of various insects, especially beetles and caterpillars; worms, slugs, and snails, are also eaten.

Voice.—The note is low and rather plaintive.

Nest.—In the nesting-season the Dotterel resorts to mountains often of considerable altitude, breeding on the slopes not far from the summits.

The eggs, three in number, deposited in a depression in moss or grass-covered soil, are cold buff, varying in shade to light olive, and blotched with brownish-black. Incubation begins about the second week in June.

In the British Isles the Dotterel breeds in small numbers on the hills of Cumberland (Lake district), while northward it may be found nesting on the Grampians (at an elevation of 3,000 feet), and on other mountain-ranges in Northern Scotland.

Geographical distribution.—Abroad this bird breeds in Scandinavia, North Russia, and eastward right across Siberia; also on some of the islands within the Arctic Circle. Over Temperate and Southern Europe it is mainly a passing spring and autumn migrant. Its winter range extends to North Africa and Western Asia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head,¹ dark brownish-black; a curved white stripe extends over the eye backwards to the hind-neck, joining there with the similar stripe of the other side; front of head, cheeks, chin, and throat, nearly white, with a little brown speckling in front of the eye; feathers of the back and wings, brownish, with lighter margins; inner secondaries, margined with red; primaries, brown; tail, brown, edged with white, except the central pair of feathers; front of neck and upper breast, greyish-brown, the lower feathers being edged with black and limited by a white crescent; lower breast, bright reddish-brown; flanks, similar in colour; abdomen, black; under tail-coverts, white; axillaries, greyish.

¹ In the shape of its head the Dotterel closely resembles the true Plovers. Its forehead is round and prominent, its beak short and straight and its eyes large and bright.

Adult female nuptial.—Similar to the male plumage, but duller in shade and the black on the abdomen is less developed.

Adult winter, male and female.—Somewhat resembles the nuptial plumage, but the top of the head is brown, and the breast and abdomen, isabelline white.

Immature, male and female.—Feathers of top of head, back, scapulars, wings, and hind-neck, edged with reddish-buff; breast, mottled greyish-brown; white crescent very indistinct; lower breast and abdomen, white.

BEAK. Blackish.

FEET. Yellow.

IRIDES. Brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	9 in.
WING	...	...	...	6 "
BEAK	...	...	...	0·6 "
TARSO-METATARSUS	...	...	...	1·3 "
EGG ...	...	...	...	1·6 × 1·1 in.

CASPIAN PLOVER. *Egialitis asiatica* (Pallas).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. vii, pls. 520 fig. 1, 522; Lilford, 'Coloured Figures,' vol. v, pl. 9.

A single instance of the occurrence of this Oriental species entitles it to be placed in the British Avifauna. It is an extremely rare and accidental visitor, which in a few instances wanders westward on migration.

The specimen above referred to, was captured in a garden on the North Denes, at Great Yarmouth, on May 22nd, 1890. It was exhibited by Mr. Southwell before the Zoological Society (Proc. Zool. Soc., 1890, p. 461), and proved to be an adult male. It is now preserved in the Norwich Museum. A second bird of the same species accompanied it but was not secured.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Forehead and cheeks, white; upper breast, reddish-brown, forming a broad band

edged below by a narrow black band; lower breast and abdomen, white; back, scapulars, and wings, brown; primaries, dark brown.

Adult female nuptial.—Similar in colour to the male plumage.

Adult winter, male and female.—Breast-band, dull brown; head, back, and wings, umber, shading to sandy-buff on the forehead, cheeks, and hind-neck.

Immature, male and female.—More sandy-coloured than the adult winter plumage, which it otherwise resembles; feathers of the back and wings, edged with buff.

BEAK. Blackish.

FEET. Greenish-olive.

IRIDES. Dusky-hazel.

EGGS. Dull yellow, irregularly spotted with dark brown: clutch, three.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	7.5	in.
WING	...	...	...	5.6	„
BEAK	...	...	...	0.8	„
TARSO-METATARSUS	...	...	...	1.35	„
EGG	...	...	...	1.45	× 1.02 in.

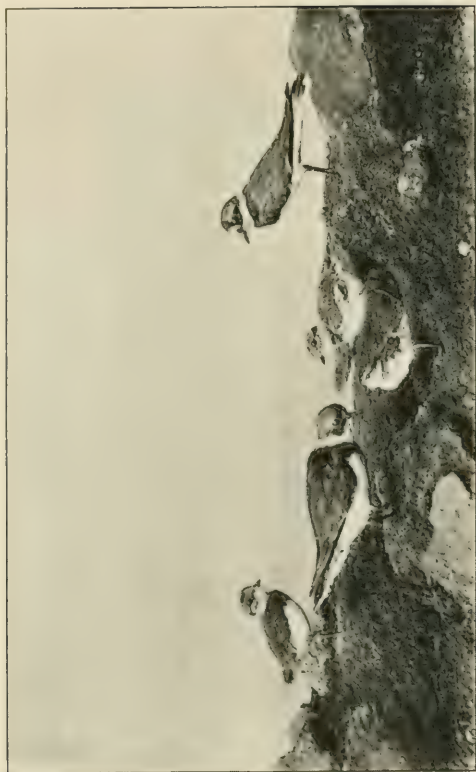
RINGED PLOVER. *Ægialitis hiaticola* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 41; Dresser, 'Birds of Europe,' vol. vii, pl. 525; Lilford, 'Coloured Figures,' vol. v, pl. 10.

This pretty little Plover may be seen at all seasons of the year along our coasts. Its numbers increase with the arrival of migrants in spring and autumn, and though many birds pass northward, a fair proportion remain to breed in our Isles.

The Ringed Plover is most adaptable to its surroundings; its favourite resorts are sandy beaches, but it also haunts rocky strands, where, in company with Turnstones, it may be seen foraging among stones and sea-wrack for food.

The banks of rivers and the shores of fresh-water lakes are also frequented.



H. Brough, Photo.

RINGED PLOVER.

(Male on the right female and young.)

From specimens collected by the author; nestlings mounted by the late Mr. E. Williams.

When not molested by the gunner, it is a tame little creature. It may be seen alighting along the edge of the shore a few paces from where an observer is standing, when it will run for a few yards, then suddenly stop and peer around with its large black limpid eyes. Now remaining quite motionless, its pretty form and plumage may be compared to an ornament placed upon the sombre grey sands.

So little heedful is this Plover of the presence of man that it will venture on the crowded beaches of fashionable watering-places, usually desolate of bird-life. Here, in the presence of all sorts of noisy holiday-makers, with donkeys galloping about, dogs yelping, and children screaming, a little family-party of five or six Ringed Plovers may be seen searching for food by the edge of the falling tide (Plate XIII.). It is pleasant to spend some time watching the movements of these nimble birds, at their favourite feeding-grounds; a hillock or sand-dune will form an excellent ambush. August and September are the best months for this purpose, as then great numbers of migrants, many of them immature and remarkably tame, are scattered over the strand.

April, May, and early June are also good months in which to make observations. In these months I have seen our shores thickly studded with Ringed Plover, mostly migrants passing northward to breed. On watching this little wader, attention is at once arrested by the beautiful black and white markings, which in the form of two collars adorn its neck. Next, interest is aroused by the movements of this species as it runs actively and noiselessly along the sands, half mouse-like, half bird-like, its feet moving so rapidly that the motions cannot be followed. But the movements of the Ringed Plover are characteristic of the group to which it belongs. It takes about a dozen short steps forwards, then suddenly halts, perhaps picks up a minute worm, and proceeds again for another dozen paces, then another halt, and in this way the movements are repeated as a considerable area of strand is traversed.

At a distance or on a dark day, when its plumage-markings are not very clear, this species can be identified among a flock of other small wading-birds by its peculiar run. Dunlins and Sanderlings, with which it often associates, scamper about incessantly and in a most irregular way.

The Ringed Plover is decidedly sociable. Solitary birds may be seen both on the sea-beach and on the margins of inland-lakes, but it generally keeps company with other small shore-birds, such as those already mentioned. On the sand-flats of the North Bull, Dublin Bay, I have seen several Snow-Buntings, having foraged in the refuse cast ashore by the tide, hop out to the water's edge and escort a small wisp of immature Ringed Plover along the beach.

Flight.—The flight of this species is swift and powerful. When a flock is scared from its feeding-grounds at the edge of the tide, the birds generally fly out to sea in a body, for a short distance, and return to the strand, often close to the spot from which they were disturbed. If persistently hunted, the flocks detach themselves into smaller batches, and as the birds gradually settle down, they scatter themselves widely over the strand.

Ringed Plovers often accompany Dunlins on the wing, and imitate their wonderful aerial movements so accurately that in a large flock the two species are practically indistinguishable. I have seen a flock, flying in from the sea, turn in the air, as at a word of command, the bright breasts and rapidly-beating pinions glittering like a shower of silver spray in the brilliant sunshine. Approaching the water's edge, the flock opened out and after a momentary pause, each member speedily shot downwards with a swooping action (a characteristic movement of many wading-birds), to rest or feed on the sands. It was not until I turned my field-glass on the birds and examined them leisurely that I detected what species were in the flock.

Occasionally a single Ringed Plover may be noted coursing swiftly over the beach, its wings almost tipping the foam of the breakers. Such a bird is often surprised by the Merlin: along the sands of the Dublin coast I have frequently witnessed a most exciting race for life. More than once have I disturbed a Merlin which flew off, leaving behind a half-picked Ringed Plover, and, judging from the quantities of feathers and bones that one finds, it is evident that this bird often falls a prey to the clutches of the swift little Falcon.

Nor can the Ringed Plover always trust the Kestrel (which seldom molests small birds), when it hovers over the sands searching for the *downy* young.

Food.—This species feeds on worms, sand-hoppers, minute shrimps, shell-fish, insects, and vegetables. I have

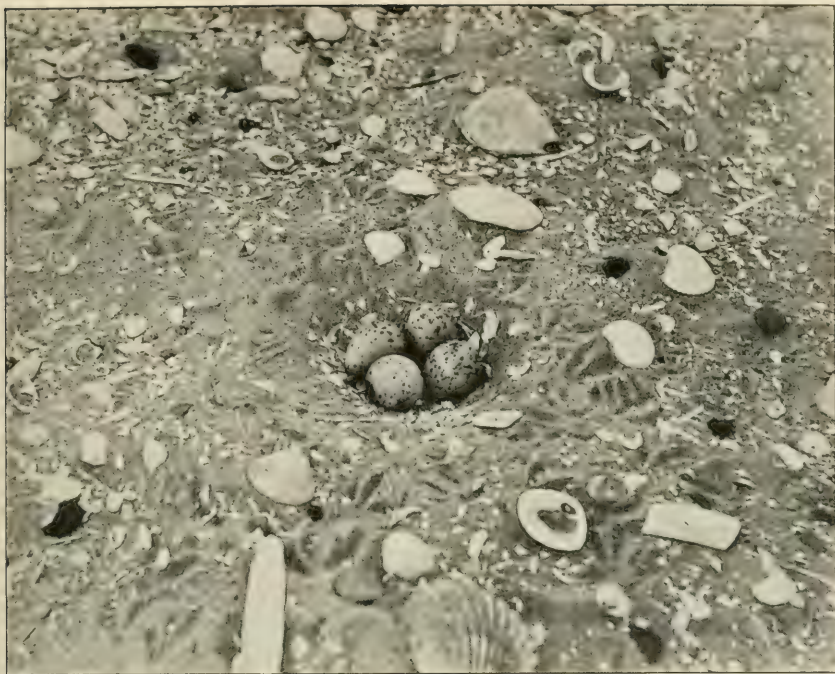


Fig. 1.—NEST AND EGGS OF RINGED PLOVER.
The foot-prints of the birds are seen in the sand surrounding the nest.



Fig. 2.—NEST AND EGGS OF RINGED PLOVER.
In damp grass and seaweed.

found gizzards filled with remains of small lustrous blue-black beetles, the bodies of which measured 3 mm. in length; in many other cases I found the gizzards to contain quantities of sand-hoppers. Fine grit is generally present.

Voice.—This little bird possesses a tuneful and plaintive voice. It seems to utter the syllables *chũ-ě-chũ-ě*, in a pleading and slightly querulous tone.

Nest.—The position and construction of the nest varies considerably. In some cases the eggs are deposited on almost level sand or gravel, the surface being slightly scraped to prevent them from rolling away. In other cases—more usual in my experience—a definite nest is attempted, the deeper and more cup-shaped hollow being neatly lined with fragments of shells and pebbles (Plate XIV., fig. 1). I have found the nest in short wet slob-land grass thickly top-dressed with slimy green and white seaweed (Plate XIV., fig. 2). Away from the tide the Ringed Plover nests on dry warrens, also on the pebbly and sandy shores and islands of fresh-water lakes and rivers.

The eggs, four in number, are pear-shaped and large for the size of the bird. The ground-colour ranges from dull cream to warm stone or fawn-colour, the dark brown and black markings taking as a rule the form of spots; in some instances these are largely replaced by streaks and scrolls.¹ The eggs are generally arranged in the nest with their pointed ends meeting in the centre like those of other 'waders,' but eggs freshly laid, *i.e.*, before the female has commenced to incubate, may be found placed irregularly (Plate XIV., fig. 2).

Incubation begins about the middle of April, but the birds arrive in March at their breeding-grounds, where they may be seen flying to and fro, while the male, at repeated intervals, utters his pleasing love-call.

At the beginning of incubation the female sits lightly, slipping off her eggs at the sight of an intruder two hundred yards away. The male often keeps some distance off, so

¹ At Newcastle beach, co. Wicklow, I found a nest which contained three half-hatched eggs (I presume the full clutch, unless one had been abstracted), abnormally light in the ground-colour, more streaked and scrolled than usual, more elongated in shape and larger, with the narrow ends not so pointed as usual.

that the nest may appear quite deserted of its owners. When hatching is nearly completed the female sits more closely and the male is more often by her side. When the young birds are running about, both parents watch them most anxiously and will feign lameness¹ or a broken wing to decoy an enemy from their little ones. Ringed Plovers occasionally make the mistake of laying their eggs a little below high-water mark; indeed I have seen the eggs carried off by the incoming tide. At other times I have observed them deserted and half buried in the sand, particularly after a storm.

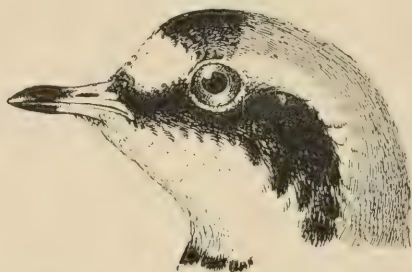


FIG. 30.—HEAD OF RINGED PLOVER. Nat. size.

Geographical distribution.—Abroad, the Ringed Plover nests in Temperate and Arctic Europe, including Iceland. Eastward it may be traced across Siberia, a small race occurring in Central Asia, and North Africa. The larger race also occurs in Greenland. On migration in autumn and winter it is distributed widely over the rest of the European and the greater part of the Asiatic Continents, the small race reaching to South Africa and India.

¹ I have scores of times seen Ringed Plovers pretending to be wounded, but perhaps the most interesting observation on this habit was made at Ireland's Eye, on June 17th, 1900. Here, over a rough stony beach I saw a Ringed Plover tumbling about with its leg and wing trailing until it reached a pool into which it fluttered and splashed. Thinking it might be really disabled I gave chase, but found I was deceived, for, emerging from the far side of the pool, the bird tumbled along for a few yards and then flew off. It was the most perfect piece of mimicry I have ever witnessed: after a short search I found two young ones, still in the down.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—On the front of the head is a black band extending from the top of one eye across to the other; in front of this is a shorter white band, limited below by a narrow black band which extends from the base of the upper segment of the beak backwards under the eye to the ears; above this a white stripe extends backwards behind the eye; rest of head, and back of neck, mouse-brown; back, scapulars, and wings, brown; there is a narrow white alar bar; primaries, dark brown, the shafts of all and the outer webs of the shorter ones marked with white; a white ring encircles the upper neck, below which is a black ring, broadest in front at the upper breast; lower breast, abdomen, and under tail-coverts, white; upper tail-coverts, greyish-brown; outer pair of tail-feathers, white; central pair almost completely brown, tipped with white, this colour increasing in the lateral series, the feathers of which are not only tipped but edged along their outer webs with white.

Adult female nuptial.—Similar to the male plumage, but the black band on the breast is sometimes narrower.

Adult winter, male and female.—The black markings are duller and not so sharply defined as in the nuptial plumage.

Immature, male and female.—Differs from the adult in having a dull brownish-black neck-ring, often incomplete in front (*cf.* Kentish Plover); the band on the face is dusky, and there is no black band on the top of the head.

BEAK. Short; basal half, yellow; terminal half, black.

FEET. Rich chrome-yellow.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	7.75	in.
WING	...	...	...	5.25	„
BEAK	...	...	...	0.6	„
TARSO-METATARSUS	...	...	...	1	„
EGG	...	...	...	1.4	× 1 in.

Allied Species and Representative Forms.—*Æ. semipalmata*, with semi-webbed feet, and smaller in size, is the American representative.

LITTLE RINGED PLOVER. *Egialitis curonica* (J. F. Gmelin).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 42; Dresser, 'Birds of Europe,' vol. vii, pl. 524; Lilford 'Coloured Figures,' vol. v, pl. 11.

The Little Ringed Plover has a wide distribution over the European Continent, including countries not far off our shores, viz., Belgium, Holland, and France. Yet it is remarkable that this bird is an extremely rare visitor to our Isles, there being few authenticated instances of its capture on British soil. A careful examination, aided by the field-glass, should be made of the flocks of Ringed Plovers which frequent our shores and lakes, especially of those collected to migrate. Among these there is always a chance of finding rare species, perhaps the Little Ringed Plover.

Except for the difference in size, the two species are difficult to identify on the strand, as their markings are very similar. When flying, however, the common bird can be recognised by its conspicuous white wing-bar.

The Little Ringed Plover has been obtained at Shoreham in Sussex; in Chichester Harbour, in May; at Tresco in the Scilly Isles, on October 23rd, 1863; on Kingsbury Reservoir in Middlesex, in August, 1864; and at Freshwater in the Isle of Wight, in August (Saunders, 'Manual of British Birds,' 2nd Edition, p. 541).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Forehead, white, with a black patch above it; rest of head, brown; cheeks, black; chin, throat, neck, breast, abdomen, and under tail-coverts, pure white, interrupted by a black collar round the bottom of the neck; back, scapulars, and wings, ash-brown; primaries, dusky-brown,¹ the outer ones being banded with a broad white mark; tail, brownish, the marginal feathers tipped with white, the outermost nearly all white.

Adult female nuptial.—The markings are less defined and the black and white head-bands are narrower than those of the male.

Adult winter, male and female.—Similar to the nup-

¹ Not patched with white like those of the common species.

tial plumage, but the black markings are duller and less defined.

Immature, male and female.—The black markings of the adult plumage are replaced by brown; the feathers of the back and wings are margined with buff.

The down of the nestling is more distinctly buff in shade than that of the nestling of the common species.

BEAK. Black.

FEET. Pale flesh-colour; nails, black.

IRIDES. Brown.

EGGS. Pale stone-colour, finely spotted and streaked with dark brown: clutch, four.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	6·5	in.
WING	...	...	...	4·5	„
BEAK	...	...	...	0·5	„
TARSO-METATARSUS	...	...	...	0·9	„
EGG	...	...	...	1·15 × ·85	in.

KENTISH PLOVER.¹ *Egialitis cantiana* (Latham).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 40; Dresser, 'Birds of Europe,' vol. vii, pl. 523; Lilford, 'Coloured Figures,' vol. v, pl. 12.

The adult male Kentish Plover resembles the two preceding species in colour, but can be identified by its incomplete black collar, which is interrupted in front by the white feathers of the neck.

Even with the aid of a powerful binocular, Ringed and Kentish Plovers cannot always be distinguished from one another, as they patter and flit about on the sea-beach. A profile view of these birds makes identification very difficult, as the black collar appears unbroken in both species. It is probable that the Kentish Plover has escaped the observation of ornithologists in many localities, where it is apparently unknown, as for instance along the extensive estuaries and mud-flats of the eastern sea-board of Ireland.

¹ Named by Latham, who first described it from a specimen shot near Sandwich in Kent.

This species is a summer-migrant to our shores, arriving in April and departing about September. It has a limited distribution along the east coast of England from South Yorkshire to Sussex; in the latter county and on the coast of Kent, it used to breed in fair numbers. It also visits the Channel Isles, and has been obtained in Hampshire and Cornwall. Elsewhere it is rare as a British bird. Four or five instances of its occurrence in Ireland are cited by Mr. Ussher, but the only specimen known to exist is one preserved in the National Museum, Dublin. It originally formed part of the Montgomery collection, and was obtained on the North Bull, Dublin Bay.

There are no records from Scotland.

The Kentish Plover, though more maritime in its habits than the Little Ringed Plover, sometimes resorts to localities at a distance from the coast.

Food.—This bird eats sand-hoppers, insects, and small worms.

Voice.—The note is plaintive; when alarmed the bird utters a shrill whistle.

Nest.—The nest is a hollow scraped in the sand, or among broken shells and shingle. The eggs, three in number, are rough in texture, and of a dull yellowish colour, spotted and streaked with black. They are often placed almost vertically in the nest, their pointed ends being buried in the sand. Occasionally the eggs are deposited on heaps of seaweed thrown up by the high tide (H. A. Dombtrain). Recently Mr. Hepburn found a nest of the Kentish Plover with three eggs in it, on the beach at Dungeness (May 10th—14th, 1900). The eggs were most difficult to distinguish from their surroundings. "The hollow in the shingle in which they were laid was 3 in. in diameter, and $\frac{3}{4}$ in. deep. The pebbles on the inside of the nest had a rather worn and stained appearance, from the birds sitting on the eggs" ('Zoologist,' 1902, p. 62).

Incubation begins about the end of May. The parent-birds attend closely to their young and use much strategy in endeavouring to allure an intruder away. When disturbed at their nesting-quarters, they will fly round several times, then suddenly alighting on the ground, will crouch with outspread wings, and tail fanned, as though the little malingerers were really wounded.

Geographical distribution.—Abroad, this Plover breeds in considerable numbers in Central and Southern Europe.

extending from France on the west side, across to the Black Sea, while still further eastward it can be traced over a large area of Temperate and Tropical Asia as far south as China. On migration in the cold season it reaches the Malay Peninsula and India. Its northerly migration-route barely touches the Baltic.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Forehead, white, with a black patch above it; top of head and back of neck, brown, tinged with rufous; above the eye there is a white stripe and in front of the eye a black stripe; sides and back of lower neck, patched with black forming an incomplete ring; breast and abdomen, white; back, scapulars, wings, and inner tail-feathers, brown; primaries, dark brown; outer tail-feathers, white.

Adult female nuptial.—No black on the forehead; neck-collar, brown; rest of plumage similar to the male, but duller in colour.

Adult winter, male and female.—Differs from the nuptial plumage in the absence of rufous tinge on top of head, and the black markings are not developed.

Immature, male and female.—Resembles the adult winter plumage, but the feathers of the back and wings are margined with buff.

BEAK. Black.

FEET. Black.

IRIDES. Brownish-black.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	6.75 in.
WING	...	...	4.25 "
BEAK	...	...	0.5 "
TARSO-METATARSUS	...	...	0.9 "
EGG	...	...	1.2 × .9 in.

Allied Species and Representative Forms.—*Æ. nivosa*, with white feathers in front of the eye, is the American representative.

KILLDEER PLOVER. *Ægialitis vocifera* (Linnæus).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. ix, pl. 708 ;
Lillford, 'Coloured Figures,' vol. v, pl. 13.

The Killdeer Plover is an exceedingly rare wanderer from America. There are but three British records:—

(a) A specimen said to have been taken in Hampshire, (Christchurch), April, 1859 (Selater, 'Ibis,' 1862, p. 276).

(b) A bird shot at Tresco, in the Scilly Isles, on January 15th, 1885 ('Zoologist,' 1835, p. 113).

(c) In 'Knowledge and Scientific News' for August, 1904, vol. i, p. 187, Mr. W. P. Pycraft writes that he has found in University Museum, Aberdeen, an example of Killdeer Plover (*Æg. voc.*) which had been erroneously labelled as the Ringed Plover (*Æg. hiat.*), shot at Peterhead, in 1867, by Mr. Andrew Murray. This is the third record from Britain.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Forehead, white, above which is a black band; behind the eye there is a white line; top of head, cheeks, hind-neck, back, scapulars, and wing-coverts, brown; alar bar, white; some of the long inner secondaries margined with rufous; primaries, dark brown, marked with white; lower back, and basal portion of the tail, reddish-brown; terminal part of the tail banded with black and tipped with white; throat, breast, and abdomen, white, interrupted by two black bands across the base of the neck.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Resembles the nuptial plumage, but the back and wings are darker brown.

Immature, male and female.—Resembles the adult plumage except that the feathers of the back and wings are margined with greyish-red.

BEAK. Black.

FEET. Yellowish-grey.

IRIDES. Brown.

EGGS. Creamy-white, blotched with dark purple-brown: clutch, four.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	9.5 in.
WING	...	...	6.5 "
BEAK	...	...	0.9 "
TARSO-METATARSUS	...	...	1.4 "
EGG	...	...	1.6 × 1.1 in.

GOLDEN PLOVER. *Charadrius pluvialis* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pls. 38, 39; Dresser, 'Birds of Europe,' vol. vii, pls. 515, 518, 519; Lilford, 'Coloured Figures,' vol. v, pl. 14.

Notwithstanding the fact that the Golden Plover is in great request for table-use, and that thousands find their way into the city markets, yet the numbers are kept up by the vast stream of migrants which reach our shores in autumn and early winter. Many pairs remain to breed, but this bird is much better known and more widely distributed as a spring and autumn migrant. It frequents the uplands of the interior as well as the slob-lands of our tidal estuaries. I have seen hundreds resting in fields, miles from the sea. In the month of August I have noticed a few adult birds



FIG. 31.—GOLDEN PLOVERS.

on the coast, still showing some of the black markings of the nuptial plumage. These are followed in September by vast droves of immature birds, which, on their arrival, are generally innocent of powder and shot, and so quite tame. At this season I have watched them on the ooze-flats feeding with Dunlins and other shore-birds. The Golden Plover runs in the same peculiar way as its congeners; it is not so active on the ground nor so sprightly-looking as the Ringed Plover. Numbers of immature birds, especially those which arrive early in the autumn, appear to sojourn but a few days, after which they move southward; I have repeatedly noticed the strand deserted during the latter part of September and the beginning of October,

though the birds were plentiful in the middle of September. About the middle of October the numbers are again greatly increased by the arrival of adults in winter-plumage. With reference to the movements of Golden Plovers, Mr. Walker informs me that on the evening of September 18th, 1901, he witnessed a flock, at a great height, fly round many times before it shot vertically downwards and rested on the slob-lands of Dublin Bay, close to where he was lying in ambush. The birds immediately huddled together, and sinking their heads between their shoulders, assumed a tired attitude. They were there in thousands, all very tame, and reluctant to use their wings again. He watched them for over an hour until darkness set in. All the time they remained motionless without feeding. For five consecutive days Mr. Walker explored the entire stretch of slob-land which they had frequented and found no sign of them. It is likely that the flock only stopped over night to rest before journeying southward.

Fresh arrivals of adult birds begin to appear about the middle of October and remain plentiful on the sea-shore until about Christmas. Mr. Ussher mentions that with continued hard frost or snowy weather, Golden Plovers leave Ireland and travel southward. The appearance of flocks at Dursey Island on December 8th, 1882, and at Cork and Wexford stations, during the week following, all birds travelling in a southerly or south-westerly direction, affords strong evidence in support of this view ('Migration Report'). However, considerable numbers of Golden Plovers remain in Ireland, and are proportionately more plentiful than in Great Britain, where the winters are usually colder. It is most interesting to watch a large flock of these birds, after performing a series of fantastic aerial evolutions, coming to rest on the waste unreclaimed pasturage of the lonely hillside, often destitute of other bird-life, save an occasional Meadow-Pipit or Stonechat. Simultaneously, and with marked precision, the birds alight, and there they stand motionless like a lot of decoys, harmonising so completely with the surroundings that a casual observer might pass them by, or, looking at them, think that they were a number of loosely-scattered stones. After a little time they may be seen to run towards one another, forming a dense pack; then they grow restless, some stretch their wings over their backs, others peer anxiously around; presently with one accord they rise and skim away in a

compact mass towards the ebbing tide. I have repeatedly seen flocks, which frequent the ooze-flats, detach themselves into small parties as the tide rises and covers their feeding-grounds, and again congregate into immense flocks as the sands are laid bare.

Flight.—On the wing the Golden Plover is remarkably swift. When a shot is fired into a flock, several of the birds will drop vertically as though struck, and then continue their flight, turning and twisting with wonderful adroitness, at no great height from the ground.

Food.—This bird seeks its food by night as well as by day. Insects of different kinds, sand-hoppers, worms, slugs, minute snails, and other shell-fish, together with vegetable matter, form the diet. I have found larva, 3 inches in length, present in the gizzard: grit and pebbles are frequently swallowed.

Voice.—The clear and not unmusical whistle, syllabled *clē-wēē*, *clē -wēē*, may now and then be heard at night over our great cities; the note in the breeding-season is described as *tīrr-pē-yōu* (A. Chapman).

Nest.—This Plover breeds on flat bogs as well as on elevated moor-lands, frequently on the summits of high mountains. The nest is a depression scraped in the ground, lined with a few blades of dry grass.

The eggs, four in number, are of a rather light buff or stone-colour, sometimes of a rich reddish-buff, boldly marked with dark brown blotches and spots. Incubation begins about the end of April.

The Golden Plover breeds freely in the northern counties of England, in Scotland, and in all four provinces of Ireland; it nests in proportionately fewer numbers in Wales and in some of the southern counties of England, but in the eastern section it is mainly a bird of double passage.

The art of decoying intruders from the nest and young is well developed in the Golden Plover. At the least suspicion of danger, the female will leave her eggs, and running along the ground for a short distance, take flight in silence. Even when the intruder is a long way from the nest, the male may be heard setting up his plaintive and pleading cry of alarm to distract attention from his mate while she is slipping from off her nest. When the young are hatched, the parents will flutter and tumble and assume such attitudes as would denote that they were suffering from a broken leg or wing. In this way they often coax an enemy

to follow them several hundred yards from where their little downy treasures are crouching low.

Geographical distribution.—Abroad, this species breeds in Central and Northern Europe, including Iceland, while on the Asiatic Continent it can be traced to Western Siberia, the true Eastern representative being the Lesser Golden Plover (Asiatic form).

Our Golden Plover also breeds in Greenland, but in North America its place is taken by the Lesser Golden Plover (American form).

On its southern migration in autumn and winter, the Golden Plover is distributed over the European Continent, as well as over South-west Asia; wanderers reach South Africa.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Forehead and stripe over the eye, white; top of head, hind-neck, back, scapulars, and wings, beautifully mottled with rich golden-yellow on a blackish ground; primaries, dark brown; axillaries, white; tail, barred with brown and yellow; cheeks, chin, throat, front of neck, breast, and abdomen, black; flanks and side of neck, edged with a white line, continuous with the stripe over the eye.

Adult female nuptial.—Similar to the male plumage, except that the black on the breast and abdomen is less developed, and is broken up into patches.

Adult winter, male and female.—The black feathers are for the most part replaced by white, but the cheeks, sides of neck, and breast, are mottled brown and golden-yellow; the yellow mottlings of the head, hind-neck, back, scapulars, and wings, are more marked than in the nuptial plumage.

Immature, male and female.—Resembles the adult winter plumage, but the ground-colour of the top of the head is blacker and the flanks are more mottled with dusky-brown and white, while the rest of the plumage, except in the region of the abdomen and throat, is profusely speckled with golden-yellow spots on a brown ground-colour.

BEAK. Blackish-brown.

FEET. Blackish.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	..	...	...	11	in.
WING	...	...	...	7.5	„
BEAK	...	...	..	1	„
TARSO-METATARSUS	...	...	...	1.6	„
EGG	...	...	...	2 × 1.4	in.

LESSER GOLDEN PLOVER. *Charadrius dominicus*

(P. L. S. Müller).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. vii, pls. 516, 517.

There are two varieties of this Plover, an Eastern or Asiatic, and a Western or American. The latter is the larger and the less brilliant in colour.

The Lesser Golden Plover is a very rare visitor to the British Isles, its occurrences being as follows:—

(A) *Asiatic*.

One found in December, 1874, in Leadenhall Market¹ among a lot of Golden Plovers supposed to have come from Norfolk. Another obtained in the flesh from Stennis in Orkney on November 26th, 1887 (Millais, 'The Field,' December 10th, 1887).

(B) *American*.

One obtained in Leadenhall Market in autumn, 1882 (J. H. Gurney). Another recorded from Perthshire, August 3rd, 1883 (J. G. Millais, 'Zoologist,' 1886, p. 26).

A third obtained in the Dublin Markets on September 12th, 1894, among a lot of Golden Plovers which had been sent direct from Belmullet, co. Mayo (E. Williams, 'Zoologist,' 1894, p. 428, also 'Irish Naturalist,' vol. iii, p. 224.)

¹ From the above data it may be seen that the majority of birds have been secured in game-dealers' shops, periodical visits to which will sooner or later reward the ornithologist. The late Mr. E. Williams of Dublin has repeatedly picked up rarities in this way.

DESCRIPTIVE CHARACTERS.¹

PLUMAGE. *Adult male nuptial*.—The chief difference in the plumage of this and our bird is to be found in the axillary feathers.

In the Lesser Golden Plover these are dark smoke-grey shading to smoke-black; in the Golden Plover they are white.

Adult female nuptial.—Similar to the male plumage, except that the black is less developed on the breast and abdomen, and is broken up into patches.

Adult winter, male and female.—The margins of the feathers of the upper plumage are lighter in the Lesser Golden Plover than in the common species; in fact in winter-plumage the bird more closely resembles a Grey than a Golden Plover.

Immature, male and female.—Upper plumage resembles that of the adult nuptial, but the tail is plain brown spotted with yellow on the margins (Seebohm). The under plumage resembles that of the adult in winter.

BEAK. Dark olive-brown.

FEET. Leaden-grey.

IRIDES. Dark brown.

EGGS. Paler in ground-colour than those of the Golden or Grey Plover: clutch, four (H. L. Popham).

AVERAGE MEASUREMENTS.

TOTAL LENGTH,	Asiatic race	...	9 in.
"	" American race	...	9.5 "
WING	Asiatic race	...	6.5 "
"	" American race	...	6.75 "
BEAK	Asiatic race	...	0.9 "
"	" American race	...	1 "
TARSO-METATARSUS,	Asiatic race	...	1.5 "
"	" American race	...	1.6 "
EGG	...	...	2 × 1.33 in.

¹ The late Mr. E. Williams draws attention to the much longer 'tarsus,' and broad white band over the eye in the Lesser Golden Plover, as compared with the same in the European bird ('Irish Naturalist,' vol. iii, p. 224).

GREY PLOVER. *Squatarola helvetica* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pls. 36, 37; Dresser, 'Birds of Europe,' vol. vii, pls. 515, 517-519; Lilford, 'Coloured Figures,' vol. v, pl. 15.

Comparatively few observers, except those who devote special study to shore-birds, are familiar with the Grey Plover. The ordinary gunner who tramps the fields and bog-lands of the open country knows but two species, the Golden and the Green Plover. In Ireland much confusion has arisen through calling the Golden the 'Grey,' the only other Plover generally known being the Lapwing, Peewit, or Green Plover. It is not strange that the Golden Plover should be designated 'grey'; there is nothing striking in its plumage comparable to the brilliant feathers of the Golden Oriole, the Golden Pheasant, the Goldfinch, the Golden-crested Wren, and of many other species too numerous to mention.

The immature Grey Plover in its first winter-plumage, is speckled finely on the back and wings with pale yellow, thus closely resembling the Golden Plover, and making distinction between the two species difficult, if the hind toe be not noticed (Plate XV., fig. 1).

Alike, however, as the two species may be in markings, they have very distinctive habits. In autumn and winter the Grey Plover is essentially a shore-bird¹, and is only very exceptionally found away from the tide; the Golden, we have seen, is widely distributed over mountain, moor, and slob-land.

The Grey Plover does not collect into closely-packed flocks; I have, however, frequently counted as many as fifty birds on a salt-water marsh of the Dublin coast, but they have been invariably scattered over a considerable area.

When flying, this species may be readily detected by its noticeable black axillary feathers. On examining a specimen, the small hind-toe, which is absent from the foot of the Golden Plover, is a distinctive feature. Though not numerous the Grey Plover is widely distributed along our low-lying coasts in autumn, winter, and spring. The majority of the birds arrive about the middle of September, and are nearly all immature; the adults in

¹ Wilson states that in America, Grey Plovers in spring and summer, frequent ploughed fields away from the sea.

winter-plumage follow in October. These are preceded, early in August, by a few birds still retaining part of their nuptial dress.¹ As winter approaches some of the birds journey to more southern climes; many, however, linger on our coasts until spring, and have been observed passing northward as late as the month of June.

Along the eastern sea-board of Great Britain the Grey Plover becomes more abundant; it is altogether rarer in Ireland than in England. It visited the former country in large numbers in the year 1887, when many were seen on the west coast by Mr. Warren, who writes:—"Late in September and early in October they were to be seen everywhere about the shores of the estuary, in all the little bays and in places where I never saw one before; from their great tameness they were evidently young birds, for they took no notice of my punt, often allowing me to get within fifteen and twenty yards" ('Birds of Ireland,' p. 256).

With reference to the tameness of immature birds I may add that on October 22nd, 1900, I nearly walked over a pair of these Plovers as they rested on the wet grass which skirts the mud-flats of Dublin Bay. I watched them for many minutes at less than ten yards' distance. Finding them so very tame I made an attempt to cover them with my cap, as a school-boy would a butterfly, but in this procedure I need hardly say that I was unsuccessful. As they rose and flew up wind, I could see that they were strong on the wing and therefore not in any way disabled. No doubt they had only just arrived and were suffering from migratory fatigue. Later in the season this species becomes shy and restless, and can seldom be approached within range of the gun.

The Grey Plover delights to rest on grassy knolls washed by the flowing tide; at ebb, the ooze and sand-flats may be seen studded here and there with this species, busily searching for food. In its movements on foot it resembles its congeners. I have seen small parties, in company with Turnstones, running about after dusk in search of food on the dry sands. At my approach they trotted in front

¹ On August 28th, 1898, the late Mr. E. Williams saw a Grey Plover on the North Bull, Dublin Bay, in full nuptial-plumage. Specimens have been obtained from the same locality exhibiting a transition plumage between winter and nuptial, many black feathers being still visible.

of me, and it was most interesting to see some of them suddenly coming to a standstill right in the middle of the bright path formed by the moon's rays, which were, at the time, casting a gleam over the boundless shore and tide.

In my experience this bird is tamer at night than in the day, though I have little doubt that it can discern an intruder at some distance. Its plaintive cry of alarm may be heard in the darkness a long way off, yet I have approached within easy shooting-range by simply walking up to the bird.

Food.—The food consists of various marine insects, minute shell-fish and vegetable matter, obtained for the most part on the strand, but sometimes the bird will enter the water and swim for a short distance in pursuit of tiny fish and shrimps; Mr. A. Williams writes me that he has noticed "Grey Plovers walk into the water until they were out of their depth and then swim a distance of some feet from the edge of the strand, apparently seeking food, as I observed them picking at some objects under the surface; some of them would take flight back again to the gravel, rising heavily out of the water."

Voice.—The Grey Plover is a very noisy coast-bird. Its cry is almost as incessant as that of the Redshank or Curlew. On the slightest provocation, it pours forth its wailing whistle, which sounds something like *tlē-ih*, or *chē-ēč*. Not conspicuous on the ground, it soon betrays its presence by its voice to the shore-shooter whom it cleverly evades by its wariness, comparatively few birds falling victims on the open strand to the ordinary shoulder-gun.

Flight.—On the wing it pursues a less tortuous path than the Golden Plover, but the flight of the two species is equally strong and swift.

Nest.—The nest is a mere scraping in the bare ground, or in grassy or moor-land soil. The eggs, four in number, are on an average darker in ground-colour, than those of the Golden, but lighter than those of the Green Plover, and, like the eggs of both the latter species, they are richly spotted and blotched with brownish-black (Seebohm).

Geographical distribution.—The breeding-range covers a vast area of the Arctic regions of Eastern Europe, Asia, and America, but to Iceland, Scandinavia, and Greenland, the bird is a rare visitant. Many eggs and young were taken on the Tundras of the Petchora in 1875 by Mr. Harvie-Brown and the late Mr. Seebohm (Seebohm, 'Siberia in

Europe,' 1880). On its southern migration in autumn, it visits the coast-lands of Europe, Asia, Africa, and North America, travelling in the cold season as far as India, Australia, Madagascar, and Central America. On passage, it has been taken along the shores of rivers and other inland waters.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*¹—Forehead, white, this colour extending back over the eye as a streak; top of head, back, scapulars, and wings, chequered and barred with dark brown and white; primaries, dark brown, the shorter ones being thinly edged with white; tail, barred black and white; cheeks, throat, neck, and breast, black; abdomen and under tail-coverts, white; axillaries, black.

Adult female nuptial.—Similar to the male plumage, except that the black on the cheeks and under-parts is less developed and takes the form of irregular patches; the back and wings are less mottled than in the male nuptial plumage.

Adult winter, male and female.—Forehead, cheeks, neck, throat, and breast, washed with pale greyish-white; abdomen and under tail-coverts, white; back and wings, chequered light brown and white.

Immature, male and female.—The shadings on the top of the head, hind-neck, back, scapulars, and wings, are pale straw-yellow, and the ground-colour of brown predominates (especially on the head) more than in the adult winter-plumage. Also, in the immature bird, the mottling is carried down from the breast to the lower part of the abdomen and flanks; axillaries, smoky-brown rather than black.

BEAK. Blackish.

FEET. Dark brown; a very small hind-toe.

IRIDES. Blackish-brown.

¹ *Note.*—At the early date of January 19th, 1900, Mr. F. Walker shot a Grey Plover on the slob-lands of Dublin Bay, showing signs of the nuptial plumage, in the form of a few small black patches under the throat, and on the breast.

On March 17th, 1900, I saw two beautiful birds, in full nuptial dress, among a flock of fourteen, in ordinary winter-plumage.



H. Brooke, Photo.]

Fig. 1.—GREY PLOVER (Immature male).
From a specimen collected and mounted by the author.



Fig. 2.— SOCIABLE PLOVER (Immature female).

Photograph of specimen shot on August 1st, 1899, near Navan, co. Meath,
and mounted by the late Mr. E. Williams.
The only Irish specimen known.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	11.5 in.
WING	...	...	...	7.75 „
BEAK	...	...	...	1.25 „
TARSO-METATARSUS	...	...	...	1.75 „
EGG	...	...	...	1.9 × 1.4 in.

SOCIABLE PLOVER. *Vanellus gregarius* (Pallas).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. vii, pl. 528 ;
Lilford, 'Coloured Figures,' vol. v, pl. 7.

The Sociable Plover is a south-eastern species, which among other countries, inhabits "the Steppes of the Crimea and of the district between the Don, the Volga and the Caucasus, as well as the Aralo-Caspian area and Turkestan" (Saunders). In the year 1860 an immature bird wandered to England, and was shot among a flock of Green Plover, near St. Michael's-on-Wyre, in Lancashire.

After a lapse of thirty-nine years, a female in the second year's plumage was secured in Ireland (the first on record in that country), and was sent to Messrs. Williams and Son, of Dublin, for preservation (Plate XV., fig. 2). It was shot on August 1st, 1899, near Navan, co. Meath. Through the courtesy of the late Mr. E. Williams I was privileged to examine this Irish rarity in the flesh, and to make several measurements before it was mounted.²

An account of the capture, a description of the plumage, and a photograph of the bird itself, are embodied in an article published by the late Mr. E. Williams in the 'Irish Naturalist,' vol. viii, 1899, p. 233.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, glossy black; above the eye is a broad white band which extends

² I found that the total length was	...	...	...	11.8 in.
Wing	...	...	...	8 „
Tibio-tarsus	...	...	...	2.5 „
Tarso-metatarsus	...	...	...	2.75 „
Hallux	...	...	...	0.25 „
Beak	...	...	...	1.12 „

from the base of the beak to the nape of the neck, and a black streak extends in front of and behind the eye; chin, white; cheeks, buff-colour; neck and back, pale brown; wings, barred with white; primaries, black; axillaries, white; tail, white, banded with dark brown, except the outer feathers on either side; under tail-coverts, white; breast and abdomen, brown, the latter of a deeper shade; flanks and lower abdomen, rich chestnut.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Closely resembles the nuptial plumage, but "it is probable that the old birds have sandy-buff margins to the feathers in the winter plumage, as would appear to be the case with the Common Pewit" (R. Bowdler Sharpe, Cat. Birds, Brit. Mus., xxiv, p. 176).

Immature, male and female.—Top of head, dark brown; line over the eye, impure white; cheeks and back of neck, dull buff, striped with brown; breast, streaked with grey; abdomen, impure white, exhibiting near the tail a little chestnut colouring; two outer pairs of tail-feathers, white.

BEAK. Black.

FEET. Black.

IRIDES. Blackish-brown.

EGGS. Somewhat resemble those of the Lapwing, but are paler, and have fewer spots: clutch, four.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	12	in.
WING	...	...	...	8	"
BEAK	...	...	...	1.12	"
TARSO-METATARSUS	...	...	...	2.75	"
EGG	...	...	...	1.8 × 1.3	in.

DESCRIPTION OF THE PLUMAGE OF THE SPECIMEN SHOT IN IRELAND.

"Top of head very dark brown dappled with light buff; a broad light-coloured band extends right over the eye from the bill to the back of the head. Back ash-grey with a number of new feathers of a dark brown tint, with a rufous edge coming out all over, which I take to be the winter plumage. Lower part of breast blackish, with a band of chestnut not very clearly defined extending right across behind the legs. Vent and lower tail coverts, white; upper

tail coverts snow white. Tail consisting of twelve feathers, two other ones white, the rest white with a band of black near the end, widest in the middle ones and narrowing as it approaches the sides of the tail. Primaries black, secondaries pure white, tertiaries and wing coverts ash grey with dark feathers coming out same as back" (E. Williams).

LAPWING. *Vanellus vulgaris* (Bechstein).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 33; Dresser, 'Birds of Europe,' vol. vii, pl. 531; Lilford, 'Coloured Figures,' vol. v, pl. 16.

The Lapwing, Green Plover, or Peewit¹, is familiar to to most of us. Large numbers remain to breed in our Isles, while the arrival of autumn and spring migrants makes this species still more abundant. In Ireland and Scotland, where unreclaimed moor-land and marsh are still extensive, the Lapwing is even more plentiful than in England.

In the latter country, the resident birds are prevented from increasing to any great extent, by the practice of systematically robbing their eggs for table-use. In Ireland, on the contrary, the eggs are little interfered with, while large numbers of the birds are netted wholesale for the markets: netting, however, is carried on chiefly in autumn and winter, so that many of the victims are migrants from the north.

Pasturage, ploughed fields, the shores of inland lakes, the banks of the larger rivers, as well as the slob-lands of our tidal estuaries, all afford feeding-ground for this widely-distributed Plover.

The Lapwing is one of the most handsome and remarkable of our native birds; it is endowed with an elegant head-crest of long gently-curved and tapering plumes, and with strongly-contrasted plumage, of unsullied white and satin-black; this, on the wings and back, exhibits in the reflected light of the sunshine, a beautiful play of iridescence, which varies from deep metallic-green to violet. The bird should,

¹ These three are not merely local names, but are so well known to sportsmen and naturalists that when speaking or writing about this Plover they may be used indiscriminately.

however, be inspected at a short distance, otherwise it might pass un-noticed as it stands motionless on the dark fallowed soil, for much of its white flanks and breast is obscured by the large over-lapping wings. But the instant a Lapwing rises its magpie-like plumage becomes noticeable, while the expansive rounded wings,¹ flapping up and down with steady beat, are unmistakable.

Flight.—The quiet and slow flight of this species offers an interesting contrast to the swift movements of most shore-birds, as they cleave the air. In autumn and winter Lapwings congregate into great flocks, and when on the wing with Golden Plover or other swift-flying ‘waders,’ imitate the movements of the latter. I have seen Lapwings increase their speed very considerably at times, and their powers of twisting and turning sharply on the wing often save them from the clutch of the Peregrine Falcon; the terror which they show at the sight of the latter is intense. Possessed of remarkable powers of endurance on the wing, they may be seen rising to an immense height and then circling about for hours before coming to rest.

This species, though strong on the wing, is not hardy in other respects, and is easily overcome by stress of weather; in severe frost and snow I have noticed it very tame, often frequenting lawns and grass-plots of dwelling-houses.

Food.—This bird partakes of a mixed diet. When feeding inland, it eats worms, insects, seeds, and sometimes berries, while crabs, small shell-fish, and fragments of seaweed, are consumed along the sea-shore.

Mr. J. E. Harting examined the stomachs of many Lapwings, and proved that those which had frequented grass-land upon a sandy soil, fed chiefly upon small beetles, which were mixed with minute particles of grit: the stomachs obtained on down-land upon a chalky soil contained fragments of snails (*Helix virgata* and *H. caperata*).

Voice.—The name of Peewit has been appropriately given to this Plover on account of its voice.

¹ In the ‘Ibis,’ 1904, pp. 446-451, Mr. F. W. Frohawk contributes an interesting paper on ‘Sexual variation in the wing of the Lapwing.’ In the male the primaries are long and broad and give a curved outline, while the secondaries, being considerably shorter, add greatly to the rounded appearance of the expanded wing. In the female the margin of the expanded wing forms a continuous line; the primaries are proportionately shorter and in flight the wings appear narrower and less rounded.

It is particularly vociferous during the breeding-season, and the piteous cry of *pēē-wīt*, or *pēē-wēē*, is (when the bird is in a high state of excitement as to the safety of its young) often preceded by a round and full note which sounds like *ði-e*, *ði-e*, the accent being well thrown on the diphthong.

Nest.—The Lapwing, in the breeding-season, resorts to rough pasturage, moor-lands, marshes, the shores and islands of lakes, as well as to the coast. I have found the eggs laid on dry, sandy soil, on stony ground, and on wet grass-covered slob-lands.

The nest is a hollow, deeper in some cases than in others. It would appear that this bird usually makes a nest for itself rather than deposits its eggs in a ready-made depression (*i.e.*, the foot-print of a cow or horse). This is all the more conclusive when we find the scrapings made by the beak or feet against the wall of the nest, represented by distinct radiating lines. I have noticed, however, that several nests which showed the scrapings most clearly did not contain eggs, being presumably 'hollows' made by the male, as he scratches the ground, when indulging in his courting antics before his mate. I have further observed that some nests, deep and well-scraped, were not lined, either before or after the eggs were laid (Plate XVI., fig. 2). In other cases I have discovered the nest neatly lined with dry grass (Plate XVI., fig. 1).

In localities where the birds are much disturbed by intruders and the eggs often plundered, it seems likely that many Lapwings may lay in adventitious hollows; under these circumstances I have found eggs deposited on the bare level soil. This species has many enemies besides man: Rooks, Hooded Crows, Jackdaws and Gulls purloin the eggs and carry them some distance from the nest, while rats break through the shells and rob the contents as the eggs lie *in situ*.¹

The eggs, four in number, are generally arranged so that their narrow ends point to the centre of the nest

¹ I have discovered and photographed a nest containing fragments of broken egg-shells apparently fresh and stained with yolk; on the soft sandy soil round the nest were the foot-prints of rats extending as a track for several yards' distance. A little further on, I found another nest, containing two eggs, each of which had an elongated hole punched in its side from which the fresh contents were exuding. The eggs were probably broken by Jackdaws which were disturbed

(Plate XVI., figs. 1 and 2). But when the clutch is incomplete the arrangement of the eggs is often quite irregular, and this may be seen even when the full clutch is freshly laid. No doubt the bird arranges the eggs by the sense of touch, *e.g.*, with her feet, or beak, as she sits hatching. The ground-colour of the eggs, ranges from warm stone to light greenish-brown, and greenish-blue shades occur in exceptional cases, while the dark brown markings vary from

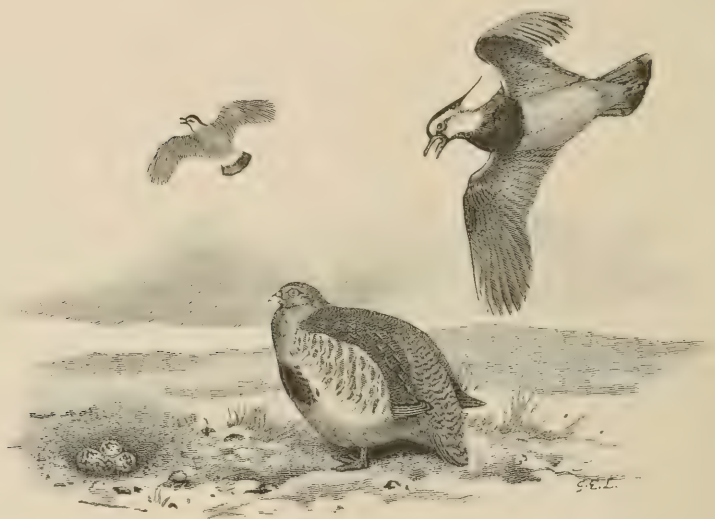


FIG. 32.—LAPWINGS AND NEST. PARTRIDGE INTRUDING.

small spots to large and confluent blotchings, and even broad zonular bands. In Plate XVI., fig. 1, two eggs of the clutch are seen to be heavily blotched.

Incubation begins about the end of March, but the birds may be seen flying about the breeding-grounds a month

before they had time to carry away their booty, for fifty yards off I discovered two Jackdaws at work, each on an egg. On seeing me the birds flew away leaving the eggs on the ground. I then found that the latter were punched in the same way as the two I saw in the nest, with which they corresponded in their markings. I presume all these eggs belonged to the same clutch. This is only one of many instances which I have noted of Plover's eggs being plundered by other birds.



Fig. 1.—NEST AND EGGS OF LAPWING.

The nest is lined with dry grass; the pointed ends of the eggs meet at the centre.



Fig. 2.—NEST AND EGGS OF LAPWING.

The nest is not lined with dry grass or other material; the pointed ends of the eggs meet at the centre.

earlier, their wild cries and antics in the air expressing great excitement at the approach of an intruder.

When laying has commenced, the male, if disturbed, rises and performs a series of fantastic twists and turns in the air, all the while calling loudly. If his preserves be invaded, he will sweep past, or dash to and fro overhead; these performances distract attention from his mate, who, meanwhile, hearing the alarm-note, quietly slips off her nest and flies away (fig. 32). Should one begin to search for eggs, the female will join the male in endeavouring by her antics to allure the collector from the spot where the eggs lie. In order to find these, the movements and cries of the male should be wholly discarded, while the spot where the female is first seen to rise should be carefully marked; this is usually situated a few yards from a nest. When the young are hatched, both parents become bold to a degree, and will brush by one's face so closely that the rush of their wings sounds like a gust of wind. On the intruder standing still for a few minutes, the birds may be seen to alight some forty yards off, as though to call attention to themselves and not to their young. If on the renewal of the search a nestling be discovered the excitement of the parents becomes intense; they tumble and twist rapidly in the air, at the same uttering incessantly their piteous cry of *pée-wee, pée-wee, pée-wee*.

Even as late as the middle of August, when the young are strong on the wing, I have seen the parent-birds evincing much anxiety for their offspring.

Lapwings will remain about their breeding-haunts for several days after all their eggs have been collected, after which they become wary and silent. When the eggs are taken late in the season, the birds soon abandon their haunts without further laying.

Geographical distribution. — Beyond our Isles, the breeding-range of the Lapwing extends from the Arctic circle to Southern Europe; limited numbers nest in North Africa, while eastward it breeds in Northern and Central Asia, reaching India in the winter.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.* — Top of head and elongated crest,¹ greenish-black; hind-neck, back, scapulars.

¹ The crest is composed of long pointed plumes, which, when erected, curve forwards and upwards.

and wings, dark lustrous-green, reflecting shades of bronze and purple; primaries, nearly black; tail, white, banded near the end with black and tipped with white; sides of neck, impure white; cheeks, throat, front of neck, and breast, very dark blue-black; abdomen, white; upper and under tail-coverts, bright chestnut; axillaries, white.

Adult female nuptial.—Similar to the male plumage, but with a shorter crest.

Adult winter, male and female.—Somewhat similar to the nuptial plumage, except that the throat is white, the head brown, with shorter crest; broad band of black across the fore-neck; feathers of the back and wings, margined with fulvous-buff.

Immature, male and female.—Crest, quite short, sides of face, neck, and throat, shaded with sandy-buff; feathers of the back and wings, edged with greyish-buff; very little lustre on the scapulars.

BEAK. Blackish.

FEET. Dark brown.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	12.5 in.
WING	...	...	...	8.75 "
BEAK	...	...	...	0.9 "
TARSO-METATARSUS	...	...	...	1.5 "
EGG	...	...	...	1.6 × 1.3 in.

[TURNSTONE. *Streptilas interpres* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 60; Dresser, 'Birds of Europe,' vol. vii, pl. 532; Lilford, 'Coloured Figures,' vol. v, pl. 17.

In some districts, as along the western sea-board of Ireland and on the Dublin coast, I have noticed this species every month in the year. Even in July¹ (though the nest

¹ The late Mr. E. Williams shot an adult female Turnstone on July 18th, 1900, on the North Bull, Dublin Bay, and kindly submitted it to me for dissection. The ovary was fully matured, and contained several

has not yet been recorded from the British Isles) small batches of immature birds, with perhaps a few adults among them, are to be met with in many localities. The Turnstone is, however, better known as a bird of passage in spring and autumn, many remaining with us throughout the winter.

In August and September the numbers increase considerably along our shores, the same may be said with regard to the months of May and June. At these seasons of the year I have seen groups of from twenty to forty together, but in winter¹ small wisps of two or three, or even single birds, are more common.



FIG. 33.—HEAD OF TURNSTONE. $\frac{11}{16}$ Nat. size. (Nuptial plumage, male.)

The Turnstone is essentially a shore-bird. It is particularly partial to the Fucus-covered rocks when laid bare at ebb-tide (Plate XXVIII). On these rocks small parties may be seen, often in company with Oyster-catchers, Redshanks, Purple Sandpipers, and other shore-birds. Sand-banks and ooze-flats are also resorted to, chiefly by immature birds, which in autumn frequently associate with Sanderlings. Turnstones have also been observed on the banks of rivers and inland lakes.

large-sized ova. On June 4th of the same year I saw a flock of twenty-eight birds on the rocks along the Dublin coast, and on July 5th noticed forty together in the same situation. There were but a few adults among them.

¹ On February 18th, 1900, I noted as many as twenty together on the rocks of the Dublin coast, and on March 30th counted thirty in a similar locality.

The adult male in full summer plumage is easily identified. His peculiar variegated and blotched plumage of chestnut, black, and white, is conspicuous if seen close on a bright day. But the small wisps which occur in the autumn are composed almost entirely of birds of the year, and their plumage is much more sombre than that of the adults. When in company with other small wading-birds, they may be recognised by their larger size.¹ The cheerful twitter of the bird, as it rises, its wide expanse of wing, its dark back and white breast, are characteristics by which it may be known as it flits along the edge of the breakers.

The Turnstone is a hardy and an energetic bird. In all weathers it may be seen trotting backwards and forwards, busily rumaging for food in the sea-wrack and other rubbish



FIG. 34.—HEAD OF TURNSTONE. $\frac{1}{2}$ Nat. size. (Winter plumage, male.)

cast up by the tide. It is most entertaining to watch the manner in which this little bird will knock aside small stones, bits of seaweed, cabbage-stalks, corks, and such tidal refuse, occasionally tossing right over its head the smaller and lighter obstacles. I have seen the almost macerated carcase of bird or beast, long since washed ashore, subjected to rough treatment from the vigorous action of the Turnstone's head.

This species thrives well in captivity, when fed on a mixture of chopped meat, millet-seeds, and bread. If one might judge from watching the habits of a few of these birds in captivity, I should think that the males are inclined to be pugnacious.

¹ The Knot is of a somewhat similar size, but its plumage and movements are so different that it cannot be mistaken. The feet of the Redshank are nearly double the length of those of the Turnstone.

Young fledglings should not be reared on the ground in the same cage with Turnstones. The latter, when searching for food, may peck at them and toss them about. I knew of a male Turnstone which killed three newly-hatched Californian Quails by turning them over two or three times a day, the youngsters surviving this treatment barely a week. Perhaps the baby Quails were mistaken for stones which they resemble in colour as they crouch motionless on the ground!

Food.—This consists of small crabs, shrimps, shell-fish, and insects, and the bird seems to be particularly fond of sand-hoppers. When it discovers a spot on the strand abounding in these creatures it will display the utmost activity to procure a big meal. I have examined several



FIG. 35.—LEFT FOOT OF TURNSTONE. $\frac{11}{12}$ Nat. size.

gizzards which contained mussels with the shells unbroken and measuring 5×3 mm., together with other bivalves, univalves, shrimps, and fine sand. Other gizzards, void of food-stuffs, contained quantities of broken, dry, white shells, like bits of porcelain, swallowed presumably to aid digestion. Other gizzards contained numbers of small crabs, measuring 5×5 mm. Small, pointed sea-snails appear to be a favourite food.

Voice.—The twittering notes sound like a series of chuckles, and seem to resemble the syllables *chic-ă chic-ă chic-ă chēē*.

Flight.—The flight is rapid, and fairly straight, and as

a rule, low. Single birds may often be seen speeding swiftly along the fringe of the breakers.

Nest.—The Turnstone breeds on the sea-coast, on islands and on the mainland, though in some localities the nest has been found several miles inland. A slight scraping in the ground, thinly lined with bits of withered herbage, represents the nest, and this is usually concealed from view under a projecting rock, or amid vegetation. The eggs, four in number, are light greenish-drab, marked with irregular spots and streaks of different shades of grey and brown. Incubation begins about the middle of June.

From repeated observations made on adult birds in full nuptial plumage during the summer months, I am inclined to think that at least a small percentage of Turnstones may breed off the Irish coast, though the nest has never yet been found. Several writers are of the opinion that this species may breed on the islands and mainland of Scotland, particularly in the north-western section.

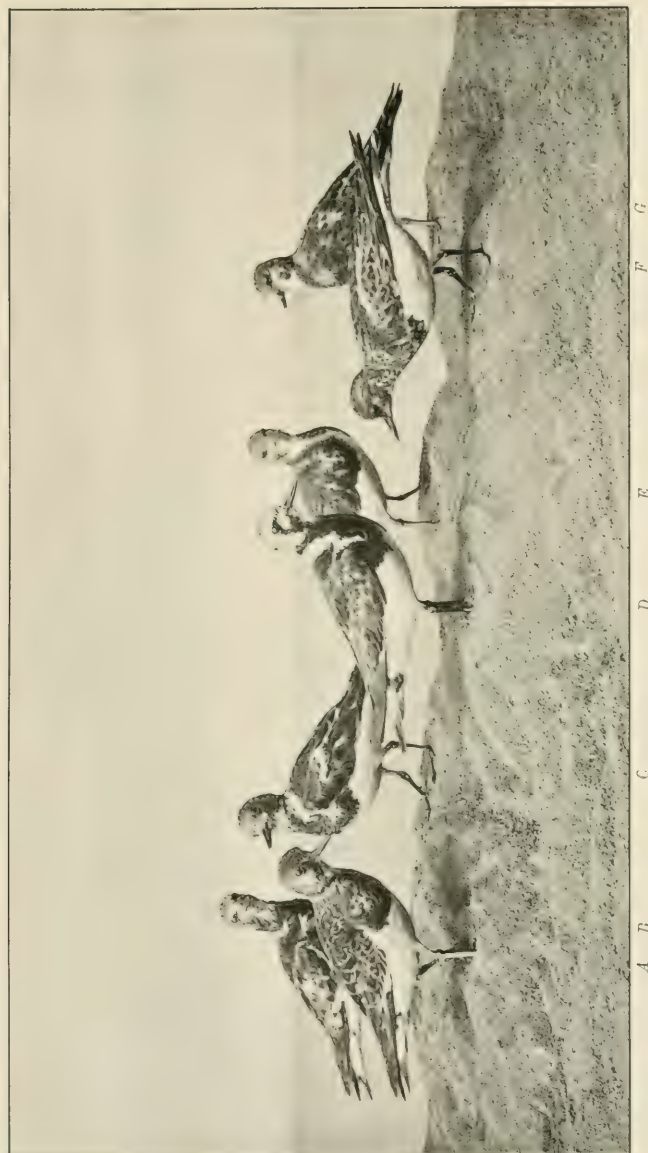
Geographical distribution.—The Turnstone is remarkable for its wide breeding-distribution; it is found in Arctic and Northern Europe, Asia, and America. In Europe, the Baltic Sea seems to be its southern limit. As a bird of passage in autumn and winter it is found along the coast-lands of all the Continents of the Globe, as well as in Australia, New Zealand, and the Polynesian Islands. Smaller numbers visit inland waters on passage.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, streaked black and white; forehead, cheeks, throat, and sides of neck, white, circumscribed by broad bands of black which become confluent with the black on the breast; back and wings, richly variegated with chestnut-brown and black; lower back, white; upper tail-coverts, brownish; primaries, brown; terminal half of tail-feathers, brown; basal half, white; outer pair of tail-feathers, chiefly white; lower breast, abdomen, and under tail-coverts, pure white.

Adult female nuptial.—The white about the head and neck is less pure than in the male plumage, being finely speckled and streaked with greyish-brown, while the chestnut markings are not so well defined.

Adult winter, male and female.—The chestnut and black markings are replaced to a large extent by dark brown, and



H. Brooke, Photo.]

TURNSTONES.

From specimens collected and mounted by the author; *D* was mounted by the late Mr. E. Williams.

(For reference to figures see text.)

the white about the head and neck becomes mottled with a similar colour; throat, whitish.

Immature, male and female.—Feathers of the head, neck, back, scapulars, and wings, brownish, with sandy-buff edgings; throat, white; neck-collar and upper breast, very dark brown; lower breast and abdomen, white.

BEAK. Blackish, slightly blunted at the end, and with a gentle upward curve.

FEET. Deep orange.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	9 in.	Female a little larger.
WING	...	6 "	
BEAK	..	1 "	
TARSO-METATARSUS		1 "	
EGG	..	1.6 × 1.1 in.	

REFERENCE TO PLATE XVII.

TURNSTONES.

- A. Adult male in transitional nuptial to winter-plumage.
- B, E, F and G. Immature birds in autumn-plumage.
- C. Adult female in nuptial plumage.
- D. Adult male in nuptial plumage.

OYSTER-CATCHER. *Haematopus ostralegus* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 45; Dresser, 'Birds of Europe,' vol. vii, pl. 533; Lilford, 'Coloured Figures,' vol. v, pl. 18.

This familiar bird (also called Sea-Pie because of its pied plumage) frequents the sandy as well as the rocky portions of our coasts. Small detachments of immature birds¹, together with those adults which remain to breed, may be

¹ In Belfast Lough, the late Sir R. Lloyd Patterson has counted eighty to one hundred Oyster-catchers in June and July. I have seen as many on the shores of Dublin Bay, but these flocks are very small in proportion to the thousands which assemble in autumn and winter.

seen throughout the summer. During the rest of the season, owing to the influx of migrants, Oyster-catchers become abundant around the coasts of Great Britain and Ireland, and have also been met with away from the tide. These birds are highly gregarious; at high water they closely pack together on the summit of a reef, occupying all the available room. Here they make a pretty study in black and white, while their pink legs and orange beaks brighten the dark rocky pedestal which supports them. At first ebb they fly off, and alight on the sand-banks over which the shallow, rippling wavelets still flow. As the tide recedes,



FIG. 36.—OYSTER-CATCHER.

the birds scatter themselves over extensive stretches of sand and ooze, on which they run about with great agility in search of food. Immense numbers, in company with Gulls, may be observed standing far out at the edge of the tide, sometimes at a distance of seven to eight hundred yards from high-water mark. These birds 'line out' in a long unbroken flank, reminding one of a regiment of infantry soldiers; to the unaided eye they look like mere specks, yet the chorus produced by their shrill voices carries with remarkable distinctness.

As the tide turns, speedily converting the flat sandy beach into a sheet of water, Oyster-catchers, generally accompanied by other species, may be seen collecting together on sand-banks yet uncovered by the inflowing tide. I have several times watched great numbers in com-

pany with Curlews, drawing close together on the highest part of a bank, as the rising tide more and more curtailed their foot-space. Here they remain until almost obliged to swim, when the leader of the flock suddenly utters a shrill cry; at that moment the birds fly off. The Curlews sometimes remain a while, their longer legs and feet allowing them to wade in deeper water.

Food.—The Oyster-catcher is provided with a peculiarly-constructed beak, laterally compressed, with which it strikes limpets off the rocks when they are crawling; it is blunted at its extremities, so that no slender points can be nipped or broken off by the closing action of the valves of shell-fish. Such a beak seems admirably adapted for prizing open the slightly gaping bivalve and robbing it of its contents. Even in its first year the Oyster-catcher has apparently strength enough to open the shells of cockles and mussels, for on dissection I have found in the stomachs of immature birds quantities of these creatures,¹ which had been swallowed without their shells. Univalves are also eaten, such as whelks, periwinkles, and limpets, together with crabs, worms,² and small fish. I have found in several gizzards small bivalves with unbroken shells which measured 12×5 mm., also the 'opercula' of periwinkles measuring 12 mm. in diameter.

I have known several Oyster-catchers to thrive well in captivity. One presented to the Dublin Zoological Gardens in 1901 never grew very tame, but it lived for some time on chopped meat and fish. It was an adult bird, and retained its winter-plumage throughout the summer. It lived in harmony with a Turnstone, a Knot, a Bar-tailed Godwit, and a Sanderling. Two others, one presented by Mr. Walker and one by myself, became quite tame in a month or so after being caged. Both these birds were adults.

Voice.—This bird, shy and watchful, constantly gives utterance to its wild cry of *kě-hěp*, *kě-hěp*, *kě-hěp*, both on the ground and on the wing. The alarm-note heard at the breeding-haunts sounds like *quick, quick, quick*.

Flight.—The flight, though well-sustained, is less buoyant, and slower than that of most wading-birds. The

¹ There is no evidence that this bird feeds on oysters, as its name would seem to imply.

² I have often found the stomach, and even the gullet and mouth of this species packed full of sea-worms.

beats of the wings are regular, and the flight, as a rule, is very straight.

Nest.—The nesting-sites vary considerably. Thus, while low-lying, sandy flats, strewn with shingle and fine gravel, form one resort, rocky shores form another. This species breeds in large numbers on islands round our coasts. On the Irish sea-board I have found the nest built on grass-grown reefs,¹ or on rock-platforms at high elevations.

“On the north coast of Mayo Mr. Warren has found Oyster-catchers nesting in the fields close to the cliffs, as well as on the rocks and islands” (Ussher), and where islands are lofty the nests are often placed on the tops of these, where ferns and grass sprout among knobs of rock. In Scotland, especially in the eastern section, this bird breeds not only on the coast, but also along the margins of large rivers at some distance from the tide; in Ireland, after several searches during many years, I have failed to find the nest in inland situations. The nest is usually a mere hollow in the rock or soil, and sometimes contains pebbles or dry rabbit-dung; blades of withered grass occasionally form a lining when the nest is placed in fields, while fragments of stems, fern-fronds, and morsels of dry seaweeds may be picked from the general surroundings. Or again, the eggs may be deposited in a depression in a clump of growing thrift, which is pressed under the sitting-bird and forms a lining without the addition of any loose material.

The eggs, normally three in number, are light stone-colour (though I have seen fresh ones of a warm buff shade), spotted and sometimes streaked in an irregular or a zig-zag manner with light and dark brown. Incubation begins in most districts about the end of April.

The natural timidity of the Oyster-catcher gives place to boldness amounting to fearlessness when its nesting-haunts are intruded upon. Many a time have I seen a pair of these birds advance towards me and ere I came within two hundred yards of their downy young, scold me with loud and incessant alarm-notes, all the while their mouths gaping widely, as they fluttered swiftly to and fro a few feet above my head.

¹ I have discovered the nest in this situation on Ireland's Eye, one of the few breeding-haunts on the east coast of Ireland.

In many districts of the British Isles this is a common breeding-species. Thus the numerous islands which stud the Atlantic-facing coasts of Scotland and Ireland, are annually tenanted by numbers. On the mainland, especially that of Scotland, the bird is also a common nesting-species, but along the southern coasts it breeds much more sparingly.

Geographical distribution.—Abroad, it breeds over a vast area of Temperate and Northern Europe and Asia, including large inland waters. In winter, great numbers push southward, reaching Southern and Western Asia, and North Africa.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Middle and lower back, breast, abdomen, and a small spot under the eye, white; elongated patch on the wing, white; rest of plumage, black.

Adult female nuptial.—Similar to male plumage.

Adult winter, male and female.—Similar to nuptial plumage except that a portion of the throat is white and there is a broad white crescent on the side of the neck.

Immature, male and female.—The feathers of the back and wings are edged with brown; middle of throat banded with white.

BEAK. Reddish, becoming lighter in shade towards the tip; compressed from side to side and blunted at the extremity.

FEET. Deep pink; thick and fleshy.

IRIDES. Crimson.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	16.5 in.
WING	...	...	...	9.75 "
BEAK	...	...	...	2.5 "
TARSO-METATARSUS	...	...	...	1.8 "
EGG	...	...	...	2.2 × 1.5 in.

Note.—"A Sheathbill, *Chionis alba*, of Antarctic America, obtained in Carlingford Lough, co. Down, on December 2nd, 1892, is in the collection of Mr. R. M. Barrington. Living examples have often been sent from the Falkland Islands" (Saunders). (*Ide* 'Irish Naturalist,' 1893, pp. 151-155, pl. 4.)

AVOCET. *Recurvirostra avocetta* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 53; Dresser, 'Birds of Europe,' vol. vii, pl. 534; Lilford, 'Coloured Figures,' vol. v, pl. 19.

At the present time the Avocet can be regarded but as a scarce and rather uncertain summer-visitor to our Isles, though formerly it bred annually in many parts of England. Small numbers still visit the flat shores of Kent and Sussex, extending along the east coast as far as the mouth of the Humber. On the opposite coast as well as in Wales, Scotland, and Ireland, it is rare. Mr. Ussher mentions thirteen instances of its occurrence in Ireland, the following counties having been visited:—Cork, Waterford, Wexford, Dublin, Galway, and Mayo ('Birds of Ireland').

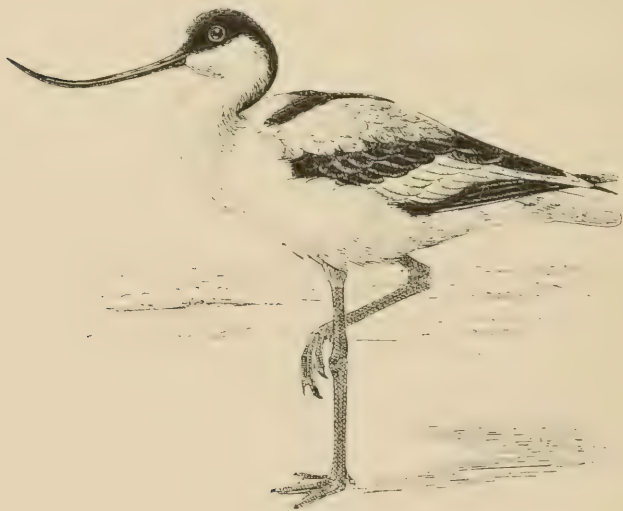


FIG. 37.—AVOCET.

This is a handsome and remarkable-looking bird, of slender build and very graceful bearing, which with its pied plumage render it an easily identified species on the sea-shore.

Its beak is unmistakable; it is of considerable length, tapers to a sharp point, and is recurved or bent upwards

like a surgeon's needle.¹ Its legs and feet are long and slender, and its toes are partially webbed (figs. 37 and 39.)

The Avocet is a bird of the coast. It delights to probe in the soft ooze of tidal estuaries, where it obtains an abundance of food.

Degland, in his 'Ornithologie Européenne,' points out that the partial webbing of the foot enables this bird not only to swim, but even to support itself on the sinking slimy marshes which it traverses.

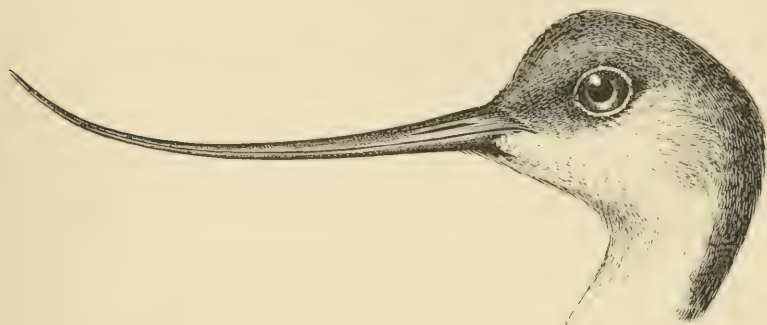


FIG. 38.—HEAD OF AVOCET. $\frac{3}{4}$ Nat. size.

The swimming-powers have been noticed by many authorities. Mr. R. Warren has seen it swim out from shallow water to the open sea, with the wind against it, the bird all the while rising buoyantly over the waves.

Food. — Worms, insects, small shell-fish, crabs, and shrimps, form the staple diet. The method of feeding is peculiar: as the bird paces over the ooze, it applies its beak to the flat muddy surface, and rotates it from side to side. This leaves a zig-zag track behind it, a useful means of detecting the bird's whereabouts.

Sir R. Payne-Gallwey points out that "the flat formation of the edges of the bill and its recurving shape allow it to sweep over the level surface of the mud. The food is taken in where the bend of the bill touches the ground" ('Letters to Young Shooters,' Third Series, pp. 301-302).

¹ From the formation of its beak the Avocet has been called the 'cobbler's-awl duck,' and the 'shoeing-horn.'

Voice.—The note is clear and resembles the syllables *klū-īt*, *klū-ē*. The popular names of 'yelper,' 'barker,' and 'clinker,' have been given, in connection with the peculiar cry.

Flight.—The flight is swift and straight.

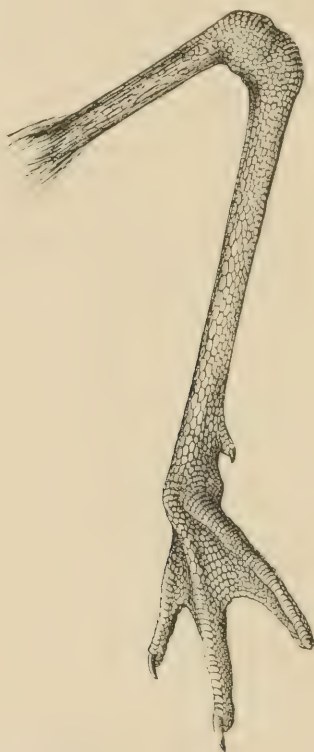


FIG. 39.—LEFT FOOT OF AVOCET. $\frac{4}{5}$ Nat. size.

Nest.—The Avocet lays its eggs in a slight hollow made in dry, muddy, or sandy soil, constructing a rude nest of withered herbage in places where material is available. The eggs, three to four in number, are dark stone-colour, blotched and speckled with black.

This species is known to have bred formerly in the following counties in England:—Lincoln, Norfolk, Suffolk.

Kent, and Sussex. It may also have bred in Staffordshire as long ago as 1686. About 1824 a large breeding-colony was annihilated by persons, who, for successive years, made a wholesale raid on the eggs which they used for cooking-purposes, while the birds themselves were victimised for the sake of their feathers which were used for 'flies' for fishing. Of later date the Avocet was little known as a nesting-species in England, though Clarke and Roebuck in the 'Vertebrate Fauna of Yorkshire' adduce evidence that this species bred at the mouth of the Trent in 1840 (Newton, Dict. Birds, p. 24).

Geographical distribution.—Abroad, it breeds in limited numbers in Holland, Denmark, Germany, France, and more abundantly in Southern and South-eastern Europe, Temperate Asia, and in Africa down to the Cape. In winter it reaches Southern India and Ceylon, and is also found in Madagascar. About the basin of the Mediterranean it is resident to some extent (Saunders).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, upper part of cheeks, hind-neck, middle of the back, primaries, and most of the wing-coverts, black; rest of the plumage, white.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—The white colouring becomes greyish.

Immature, male and female.—Chiefly white, with brown markings, which are edged with rufous, instead of black as in the adult.

BEAK. Black. Flattened and rather expanded at the base, becoming pointed towards the extremity; flexible and upcurved.

FEET. Light bluish-grey; toes, semi-webbed.

IRIDES. Reddish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	18	in.
WING	...	...	...	8·5	„
BEAK	...	...	...	3·25	„
TARSO-METATARSUS	...	...	...	3	„
EGG	...	...	...	2 × 1·5	in.

BLACK-WINGED STILT. *Himantopus candidus* (Bonnaterre).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 34; Dresser, 'Birds of Europe,' vol. vii, pls. 535, 536; Lilford, 'Coloured Figures,' vol. v, pl. 20.

This species, also of the black and white type of plumage, may be recognised by the great length of its legs, from which it derives its name. Its beak is not curved like that of the Avocet.

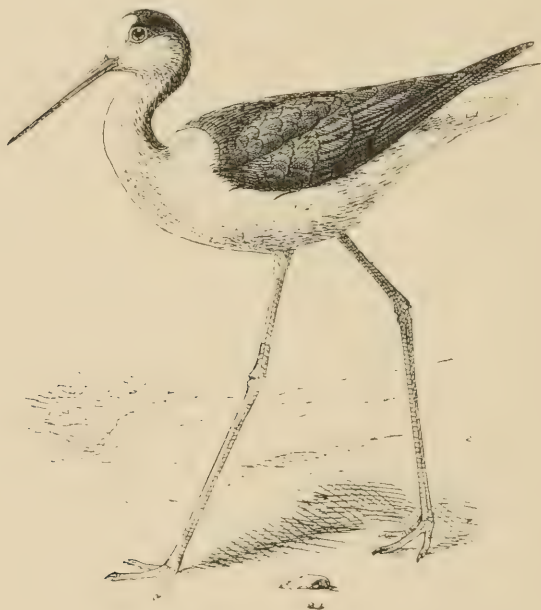


FIG. 40.—BLACK-WINGED STILT.

Mr. Saunders, in his 'Manual of British Birds,' 2nd Edition, p. 563, mentions that Sir Robert Sibbald noticed the occurrence of this bird in Britain as long ago as 1684, and described two examples shot at a lake near Dumfries.

It is an uncommon visitant to the British Isles, though it has been recorded from most of the southern and eastern counties of England, and less frequently from the midlands. Several specimens have been secured from Norfolk. On the west side, and in Wales, it is of very rare occurrence; in 1793 it visited Anglesea (Montagu).

There are not many records from Scotland:—Dumfries, Perthshire, the vicinity of the Clyde near Glasgow, Aberdeen, the Orkneys and Shetlands, have yielded specimens.

There are six records from Ireland, none of recent date.

The following counties have been visited:—Kerry, Cork, Westmeath, Limerick, Dublin, and Mayo. The earliest recorded occurrence took place in Cork in the winter of 1823 or 1824. There have been no records during the latter half of the last century.

Food.—The Black-winged Stilt feeds largely on insects, chiefly gnats and aquatic beetles. It may be seen standing in water (almost sufficiently deep to cover its long legs and feet), watching for flies, at which it snaps as they buzz around (Jardine).

Voice.—The bird utters a clear note resembling the syllables *pee-pee-pee-pee*. In the breeding-season it may be heard in the vicinity of its nest, making a sound like *gurēt, gurēt, gurēt, gurēt*, sharply repeated (Saunders).

Nest.—This species usually builds by the margins of pools or lakes. The nest, in some instances, is a simple structure made of scanty herbage, and placed in a tuft of rushes or grass, but on wet, muddy soil the bird banks up its nest to prevent the eggs from getting damp. These, four in number, are described by Mr. Saunders as “of a warm stone-colour with hieroglyphic-like scrollings and blotches of black.”

Geographical distribution.—This Stilt breeds sparingly in Hungary, and abundantly in Southern Spain, in Sicily, and on the shores of the Black, Caspian, and Aral Seas. Eastward it is found nesting in Temperate and Southern Asia as far as India and Ceylon. In parts of the North of Africa it is also a common breeding-species. On migration in winter it visits Southern Africa and Madagascar, while stragglers wander northward at irregular intervals to many countries of Central Europe.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Back, scapulars, and wings, rather glossy greenish-black; tail, shaded grey; rest of plumage, white.

Adult female nuptial.—Similar to the male plumage, except that the feathers of the back and wings are dark dusky-brown.

Adult winter,¹ male and female.—Resembles the nuptial plumage.

Immature, male and female.—Back of head, hind-neck, and upper back, greyish ; rest of back and inner secondaries, brown ; primaries, dark brown.

BEAK. Black ; straight and slender.

FEET. Warm pink ; very long ; toes, slightly webbed.

IRIDES. Crimson.



FIG. 41.—HEAD OF BLACK-WINGED STILT. $\frac{11}{12}$ Nat. size.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	13·5 in.
WING	...	...	...	9·5 „
BEAK	...	..	...	2·5 „
TARSO-METATARSUS	...	...	...	4·7 „
EGG	...	...	...	1·7 × 1·25 in.

¹ A “brown-backed winter plumage” may be assumed (R. Bowdler Sharpe, Cat. Birds Brit. Mus., vol. xxiv, p. 313).

GREY PHALAROPE. *Phalaropus fulicarius* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pls. 81 and 82; Dresser, 'Birds of Europe,' vol. vii, pls. 538, 539, fig. 1; Lilford, 'Coloured Figures,' vol. v, pl. 21; Booth, 'Rough Notes,' vol. ii, pl. 32.

This beautiful species is not improbably an annual British visitor during autumn and early winter, but its migratory movements are irregular and rather spasmodic in character. It is of less frequent occurrence as a vernal migrant on its passage northward.

In England it occurs most often in the southern counties.

In Scotland small numbers have been recorded from Berwickshire to the Orkneys (Saunders). Recently several specimens have been obtained from the Outer Hebrides. Mr. Buckley mentions a bird taken at Lochmaddy about October 20th, 1900; this appears to be the first record of this species occurring in these islands. In September, 1901, Dr. J. M'Rury records one found in Barra, and on November 3rd a specimen, the wing and leg of which were received by Mr. Eagle Clarke, was obtained at Eilean Ghlais Lighthouse.

In Ireland this bird is uncommon, though it probably occurs annually. Nearly all the maritime counties have been visited, and there are records from the most westerly points of Ulster, Connaught, and Munster.

A great invasion of Grey Phalaropes took place between August 20th and October 8th, 1866. Upwards of 500 were killed, fully half of which were obtained in Sussex (J. H. Gurney). Three years later large numbers again appeared in Britain. In 1886 there was another immigration confined chiefly to the south of England; this was followed in 1891 by a much more widely spread visitation, many of the birds extending their range even to the western counties of Ireland.

The habits of this species are exceptionally interesting. Like other shore-birds (*Limicolæ*) it is active both on foot and on the wing, but, in addition, it is an expert swimmer, and may often be seen far out at sea, resting on the surface of the water as buoyantly as a cork. To subserve its aquatic habits it has acquired a much denser covering of feathers than is possessed by the great majority of wading-birds, and its skin is thickly coated with down like that of a Gull.

The foot is partially webbed, each toe being fringed with membranous lobes.

The Grey Phalarope is an unsuspecting little creature. It delights to paddle in small pools on or close to the sea-coast; less frequently it resorts to inland waters. On November 19th, 1899, I watched one of these birds on the beach of Dublin Bay, pattering about at a distance of only fifteen yards, and quite unconcerned at my presence. It several times rushed into the water and out again with amazing agility, and spun round in pursuit of aquatic insects with the speed of a feather twisted by the wind. The nodding movements of the head, described by many writers, were very apparent. Twice the bird rose vertically from the surface of the water, as if snapping at flies, which were buzzing around. I continued to watch it until darkness set in, and with the last glimmer of daylight I left it swimming contentedly in the middle of its favourite pond. I must have been a full half-hour making observations, during which time the bird, at irregular intervals, quitted the water, but never wandered far from the edge of the pool.

The indifference of the Grey Phalarope in allowing man to approach it is remarkable. In his 'Letters to Young Shooters,' Sir R. Payne-Gallwey mentions that he has seen this species within an oar's length of him, swimming tamely about on tidal rivers and creeks, and resembling a miniature Gull floating on the surface.

Watters draws attention to the fact that in America the Phalarope is gregarious in winter. He states that Audubon observed large flocks frequenting the neighbourhood of the Ohio and Arkansas rivers; hundreds were also to be seen far out at sea, assembling on the banks of seaweed.

Flight.—The flight is very swift and undulating and the beat of the wing is rapid.

Food.¹—Marine animals of various kinds are eaten, such as small crabs, shrimps, insects, and worms; also scraps of seaweed. In search of food the Grey Phalarope may be met

¹ Dr. R. F. Scharff has kindly favoured me with the following report on the contents of the stomach of a Grey Phalarope which I recently obtained (November 20th, 1899) on Dublin Bay. "The gizzard of this bird contained mostly sand with small sharp stones, the largest measuring one-sixth of an inch in length. As for the food, it consisted entirely of two species of Invertebrates. The last meal was about a

with hundreds of miles from land; and off the coasts it is "a delightful sight to watch these birds gathering their food in the high-running surf, or when that is done peacefully floating outside the breakers" (Newton).

This bird will also pick the parasites off the backs of whales and other cetaceans (Saunders).

Voice.—The voice is clear and sharp, resembling the syllable *tweet*; the note of the female, sometimes heard, may be syllabled *kluik-ink-ink*.

Nest.—The Grey Phalarope nests on the ground, laying its eggs in a depression scratched in soft, moss-covered soil. The breeding-haunts are usually near water, *i.e.*, by the margin of a small lake or pool. The eggs, four in number, are light yellowish, shading to greenish-brown, well marked with blotches and spots of dark brown. It is a rather singular characteristic of Phalaropes, that while the male takes the task of incubation and of rearing the young, his spouse, more active and gaily plumed, carries on the major part of the courtship.

When hatching, this species is wonderfully tame, allowing itself almost to be handled.

The Grey Phalarope will live in captivity, and birds, even when slightly wounded by gunshot, have thriven for months and years. Thompson, in his 'Natural History of Ireland,' mentions an instance of a Phalarope which got entangled in fishing-nets spread out to dry. A few hours after capture the bird fed upon fragments of fish from the hands of its owner. The same writer also states, "A Phalarope, shot near Belfast as long ago as 1818, was wounded in the wing and came into the possession of Mr. John Sinclair. He kept it on his pond for several months. It was fed on worms, was very tame, and its buoyancy on the water met with the highest admiration."

Geographical distribution. — This species resorts in the nesting-season to the high Arctic regions of Europe (*viz.*, Spitzbergen), Asia, and America. On its winter

dozen 'maggots' or *larvæ* of a fly, such as might be found along banks. They were very slender and nearly half an inch long. A previous meal consisted of about the same quantity of a small gasteropod shell, probably *Hydrobia ulva*, which occurs abundantly in brackish water round the coast of Ireland. The surfaces of the shells were much worn, and must have been in the gizzard for some time, while the maggots were quite fresh."

wanderings it is found frequenting the seas and inland waters of all the great Continents of the Globe, and such remote countries as Chile and New Zealand.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult female*¹ *nuptial*.—Top of head, dark brownish-black; hind-neck, back, and scapulars, dark brownish-black, but the feathers are distinctly edged with light reddish-brown; wing-coverts, greyish, with white margins; primaries and tail, greyish-black; throat, front of neck, breast, and abdomen, warm chestnut; cheeks, chiefly white.

Adult male nuptial.—The pattern of the plumage is somewhat similar to that of the female, but the markings are decidedly duller, the top of the head is browner, and the chestnut coloration is mixed with white.

Adult winter, male and female.—Head, cheeks, and throat, chiefly white, with some dark grey feathers on the hind-neck and behind the eye; rest of neck, throat, breast, abdomen, flanks, and under tail-coverts, white, save a small patch of light bluish-grey on the sides of the upper breast; back and scapulars, 'french' or 'pearl' grey; wing-coverts, chiefly greyish-black edged with white, the margins of the greater wing-coverts forming a white alar bar; primaries and tail, greyish-black.

Immature, male and female.²—Somewhat similar to the adult winter plumage, but the white of the breast is suffused in its upper part with yellowish-brown, and the feathers of the back and wings are edged with sandy-buff.

BEAK. Yellow, with the point black; straight and slender.

¹ The brighter-coloured plumage of the female Phalaropes is described before that of the male.

² Through the kindness of Dr. Scharff, I have been able to examine a series of specimens of the Grey Phalarope taken on the Irish coast, the majority of which were immature birds in the transition autumn to winter plumage. I have in my collection a good specimen (a male), obtained on the North Bull, Dublin Bay, on November 20th, 1899. It had assumed much of the winter plumage but some dark feathers were still visible on the back. The bird, which I examined in the flesh and subsequently set up, was in very poor condition, weighing only 7½ drachms—less than an ounce. As I proceeded to skin it I noted with interest that this species possesses several structural characters corre-

FEET. Yellow, with a tinge of green. The webs only connect the roots of the toes, the tips being edged with a series of free membranous lobes. (For a more detailed description of the foot, *vide* 'Irish Naturalist,' vol. x, p. 67.)

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	8.25 in.	Male smaller.
WING	...	...	4.9	„
BEAK	...	...	1	„
TARSO-METATARSUS	...	...	0.9	„
EGG	...	...	1.25 × .88 in.	

RED-NECKED PHALAROPE. *Phalaropus hyperboreus* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 83;
Dresser, 'Birds of Europe,' vol. vii, pls. 537, 539, fig. 2;
Lilford, 'Coloured Figures,' vol. v, pl. 22.

The Red-necked Phalarope, smaller and even more elegant in form than the preceding species, is a rare and an irregular visitor to the British Isles. It is for the most part a passing migrant in spring and autumn, although a few pairs take up their breeding-quarters on some of the Scotch Islands, viz., the Shetlands, Orkneys, and Outer Hebrides. On the east coast of Scotland it is seldom met with. There are several records from the east coast of England, and of recent years this bird has been observed

lated with its aquatic habits. The body is densely covered with feathers, especially on the breast and abdomen. The latter regions are also thickly coated with down. In shape the breast greatly resembles that of the Gulls. It is full and rounded, and owes its contour, not to any modification in the form of the pectoral muscles or sternum, as compared with the same in a typical wading-bird, but to the more pronounced curvature of the feathers, which in most wading-birds are straighter in shape. The fat in the region of the breast differs from the soft, creamy, light-coloured, oleaginous fat of the typical *Limicola*, being of a firmer consistency, dark yellow in colour, closely resembling the fatty tissue of Gulls.

annually about the north-east of Lincolnshire. The southern counties and some of the midlands have also been visited. On the opposite shores (including those of Wales) it is very uncommon. Recently two specimens have been obtained in Towyn, Merioneth; one in September, 1901, the other in the autumn of 1902 (H. E. Forrest, 'Zoologist,' 1901, p. 428, and 1904, p. 461).

The history of the Red-necked Phalarope as an Irish bird is highly interesting and deserves special notice. It was unknown in the country previous to November, 1891, when after a great gale, a single specimen was shot in the co. Armagh, and until quite recently this represented the only reliable instance from Ireland. It is not strange, therefore, that in that country this species was looked upon as an extremely rare and accidental visitor. In the summer of 1902, however, the late Mr. E. Williams, of Dublin, received additional specimens, including a nestling; moreover he ascertained by correspondence that the birds sent to him were breeding in the locality from whence they came. I examined each specimen in the flesh; they were undoubtedly adults, the male in full nuptial garb, the female showing some of her winter feathers. The nestling was very young—recently hatched—and was thickly covered with soft woolly down. With reference to this important ornithological discovery I quote the following account from a paper written by the late Mr. E. Williams, which was published in the 'Irish Naturalist,' vol. xii, p. 41:—

"The Red-necked Phalarope (*Phalaropus hyperboreus*) was unknown as an Irish bird till the year 1891, when, during the month of November, a great gale occurred and a quantity of Forktailed Petrels and Common Phalaropes were blown inland. Among the specimens I received were a Wilson's Petrel and a Red-necked Phalarope, both new to Ireland. The Phalarope was in full winter plumage, and was shot by Mr. J. A. Haire, at Loughgilly, co. Armagh. This specimen is now in the National Museum.

"Nothing more was heard of this species till May, 1902, when I received a beautiful specimen in full summer plumage from Mr. J. A. Sheridan; the exact locality where he obtained the bird I have been unable to ascertain. It had a curiously malformed beak, turned up at the end like a miniature Avocet, and it showed in a very marked degree the beautiful bay colour on the neck, from which the bird derives its name.

“Before giving an account of the discovery of this bird as a breeding species in Ireland, I may say that, seeing the sad havoc that has occurred to the species in the Orkneys and Shetlands by egg collectors and others, I have resolved, in consultation with a few leading Irish ornithologists, not to divulge the exact locality of the breeding ground, but to say in a general way ‘the West of Ireland.’ I am also glad to say that the gentleman on whose property this very interesting discovery has been made shows every disposition to have the birds rigidly protected.

“Early in the month of July last this gentleman sent me the skin of a Phalarope which had been rather roughly handled, but thinking that he had been on a yachting cruise round Scotland, and had probably obtained a specimen, it did not interest me much. In acknowledging the receipt I just said, ‘Of course the bird is not Irish.’ Judge of my surprise when I received the following letter: ‘The Red-necked Phalarope which I sent you was, of course, Irish, otherwise I would not have sent it to you. I now send two others shot to-day within a mile of the house. The birds breed here, and have, according to my keeper, done so for many years; he has also frequently found their nests, and on my questioning him he gave me a correct description of their eggs, colour, &c., &c. You will kindly set them up and give them on loan to the Natural History Museum’ (where they now are).

“In my reply I said that ornithologists would scarcely credit such a thing that this, a polar-breeding species, should be found breeding so far south, and begged him to set matters beyond all doubt by obtaining either an egg or young bird in the down. To my great delight, on 1st of August, I received a baby Phalarope, with a note, in which my correspondent said:—‘I am sorry to have to send you an uncontrovertible proof of the Red-necked Phalarope’s nesting here. This is one of their chicks—I saw one other. The distress of the two old birds made it very hard to kill this little thing. During my tramp through the bog I counted seventeen, but there may have been many more; the most of the birds I saw were females. The tameness of these is very marked, as apparently unconcernedly they are seeking food within a distance of a few feet. It is my greatest desire that these birds should be perfectly protected and unmolested. I am surprised that these little chicks are able to survive their many enemies, especially as there are always a lot of Black-backed and other Gulls on the bog.’

“The chick weighed 96 grains; plumage like a downy Dunlin, but down much more golden-yellow about head and neck, shading into white on lower parts; two well-marked white stripes on a black surface down middle of back. Feet inside flesh colour, outer parts dark, toes black, beak dark flesh.

“The male bird, which is much more obscure in the colour, had two very large hatching spots on the breast, showing that he assists in the duty of incubation; he is smaller than the female, and weighed 589 grains. The female bird, strange to say, was assuming the winter plumage so early as 14th July, and weighed 691 grains.”

Like the Grey Phalarope, this species is little heedful of the presence of man. Many naturalists have noticed how unconcernedly it will swim about, nodding its head and constantly dipping its beak into the water for food at a few yards distance from the observer. The Red-necked Phalarope, like its congener, is gregarious in winter; it swims with the same ease and grace, but is seldom met with far out at sea.

Food.—This consists largely of small crabs, shrimps, worms, and insects.

Voice.—The note may be syllabled *pleep, pleep*, or *wit, wit, wit* (Saunders).

Flight.—The flight resembles that of the Grey Phalarope.

Nest.—The nest¹ is generally situated in marshy ground amid rushes and other aquatic vegetation; the eggs, four in number, somewhat resemble those of the Grey Phalarope, but are smaller and more pointed. Like the preceding species, the male bird incubates and is courted by the female.

¹ I am much indebted to Mr. Barrington for the following account of the nesting-haunts of this species, as observed in company with the late Mr. E. Williams, in the West of Ireland in 1904. Mr. Barrington writes: “No nest was made, it was merely a rounded depression on a little tuft of rushes, which was raised an inch or two (not over six inches) above the level of a very wet marsh. The young, when leaving the nest, would walk out into the water almost; at any rate, the place was so damp that the water would rise over the soles of one’s boots, two feet from the nest, and little shallow pools were everywhere about, the land being level for an acre or two. It was close to the sea, and perhaps at times the water would be brackish where the little streams overflowed the land and sandy flats adjoining.”



RED-NECKED PHALAROPES.

A--Male. B Nestling. C--Female.

Photograph of the first specimens recorded as breeding in Ireland.

Specimens mounted by the late Mr. E. Williams.

The Red-necked Phalarope breeds sparingly in the Shetlands, Orkneys, and Outer Hebrides, also in Perthshire, Inverness, Sutherland, and in the West of Ireland.

Geographical distribution.—Abroad, this bird breeds in many countries of Arctic Europe (including Iceland and the Faroes, where it is plentiful), Asia, and America. In other words, it has practically a circumpolar breeding-range. On migration in autumn and winter it reaches Southern Asia, eastward to Japan, and westward to lat. 30° N. along the American coast. It occurs chiefly as a migrant in the south-eastern part of the European Continent.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult female nuptial.*—Head, hind-neck, and upper back, dull slate-grey; rest of back and scapulars, darker grey, some of the feathers of the latter being edged with buff; wing-coverts and secondaries, edged with white, forming an alar bar; primaries, brown; tail, light brown, except the middle feathers which are of a darker shade; chin, white; sides and front of neck, chestnut-brown; lower neck and upper breast, dull slate-grey; lower breast and abdomen, white.

Adult male nuptial.—Resembles the female plumage in pattern, but the colours of the head and neck are duller and less defined; the chestnut-brown is much less extensive and is not carried across the front of the lower throat.

Adult winter, male and female.—Front and top of head, white; back of head, eye-stripe, and hind-neck, dark brown; back, scapulars, and wings, greyish, the feathers being margined with white; cheeks, throat, breast, and abdomen, whitish.

Immature, male and female.—Resembles the adult winter plumage, except that the feathers of the back and wings are dark greyish, with light buff edgings.

BEAK. Black; straight and very slender.¹

FEET. Greenish.

IRIDES. Blackish-brown.

¹ The beak is a characteristic feature, and is proportionately longer and much more slender than that of the Grey Phalarope.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	7.5 in.
WING	...	...	...	4.4 „
BEAK	...	...	...	0.9 „
TARSO-METATARSUS	...	...	...	0.8 „
EGG	...	...	...	1.15 × .82 in.

Allied Species and Representative Forms.—*Phalaropus wilsoni*, which is larger than either of the preceding birds, is an American representative of this genus.

WOODCOCK. *Scolopax rusticula* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 77; Dresser, 'Birds of Europe,' vol. vii, pl. 540; Lilford, 'Coloured Figures,' vol. v, pls. 23, 24; Booth, 'Rough Notes,' vol. ii, pls. 23, 24.

The Woodcock, so named because it rests by day amidst the shelter of wood and covert, is widely distributed over Great Britain and Ireland in winter, being very plentiful in the latter Island. A large and increasing number remain to breed, and in October and November these are augmented by the arrival of migrants from colder countries.

By December the migration has practically come to an end, so that the numbers which sometimes appear suddenly on the coast during severe frost and snow later on in the winter, represent simply a mustering together of the birds, which in milder weather were scattered over the interior of the country.

The Woodcock is a peculiar bird. In its habits it is strongly nocturnal, feeding almost exclusively at night, and hence it is difficult to observe.¹

¹ In the summer of 1890, as I was sitting at dusk in a pine-grove near Enniskerry, co. Wicklow, trying to catch sight of a Blackcap which was warbling exquisitely in a tree close by, I suddenly perceived a Woodcock standing within a yard or so of me. So perfectly did its rustic colours harmonise with the surrounding withered ferns, leaves, mosses, stones,



H. Brooke, Photo.]

WOODCOCK.

From specimens collected and mounted by the author.

Flight.—Sportsmen who reside in the districts it frequents are familiar with the aerial movements of this highly prized game-bird. When evicted by dogs or beaters from its sleeping-quarters in the quiet glade, it springs into the air impetuously, and in most cases disappears among the trees with surprising speed, or pitches in some neighbouring herbage outside. But if undisturbed during the day it does not quit the wood until dusk.

The Woodcock is very conservative in its movements on the wing; it usually pursues the same route to and from its feeding-grounds during an entire season. I have seen several of these birds pass along the outskirts of a wood towards a swamp, and have noticed, in the fading twilight, their resemblance to owls in their slow, buoyant, flapping flight, though sportive whirling manœuvres are also indulged in at dusk. Marshy, low-lying ground is much resorted to, and there seems to be little doubt that salt-water slob-lands are occasionally visited. In severe frost, as before mentioned, Woodcocks undoubtedly appear near the sea; when unable to probe the frozen ground for worms, they temporarily become coast-frequenters, and marine shell-fish may be found in their stomachs. In the 'Fowler in Ireland,' Sir R. Payne-Gallwey writes: "at break of day, in a frost, I have shot Cock amongst rocks and seaweed on the beach, especially at high water, when it would seem they were driven shoreward by the rising tide."

If the season be mild the Woodcock lurks about the open country wherever sufficient cover is available, and being a strong and sturdy bird, it keeps in good condition even in frost and snow; it has the good sense to shift its sleeping-quarters according to the severity of the weather, which no doubt tends to keep it sleek and plump. Migration, however, appears at times to exhaust it, for emaciated birds have been captured with the hand about sandhills and drains on the sea-coast.

Food.—The food, consisting mainly of worms and insects, is easily procurable while the weather is mild, and even when the fresh-water marshes and rivulets are frost-

&c., that it might easily pass unnoticed, were it not for its great black eyes, which gazed anxiously at the intruder on its preserves. Hiding behind a tree I remained motionless, and presently saw the bird pace slowly about and (as far as the light permitted me to judge) pick among the dead foliage for food.

bound, the bird can remain in the woods and search among the decaying leaves for insects, but it is only as a last resort in continued hard weather that it visits the tidal slob-lands, or searches among the rocks and seaweed for shell-fish.

Many writers have observed that a very severe frost and snow in Britain induces a strong westerly movement, the birds appearing along the west shores of Scotland and Ireland in great numbers. Here the migrants are usually brought to a halt, some which ventured further having been found drowned in flocks in the ocean.

Voice.—In winter the Woodcock is practically voiceless, though a slight sound like *āk āk āk* has been heard from a bird when flushed; but from February onward through the breeding-season, peculiar notes are uttered during the evening flight, when the birds proceed and return along an accustomed course over the woods. The sound then heard is a triple croak, usually followed by a hissing whistle, the latter is often uttered in early spring before the croak is taken up.

Nest.—This species breeds in timbered situations, making its nest on the ground. In some instances this is concealed from view, but not over-hung, by tall herbs, brackens, and shrubby undergrowth (Plate XX.), but in other cases I have seen it on soft, dry ground thinly covered with stunted grasses and mosses. The eggs are sometimes laid in a mere hollow, without any lining; or a ring-fence is formed of fir-needles and other dead material round the nesting-hollow; but I have also seen well-formed nests made of and lined with dead leaves, to which bits of bracken and stems were added. I have found, however, that it is almost impossible to remove a nest and retain its contour perfectly intact, without digging up a portion of the surrounding soil. The eggs, four in number, vary from light to dark shades of buff and stone-brown, blotched and spotted with grey and brown. The female sits closely on her eggs, especially when they are nearly incubated. The parent-birds display great affection and care for their brood, and show undoubted courage when an enemy appears on the scene. Mr. Ussher states that when a former game-keeper of his was "walking with beagles through a wood where these birds were breeding, one of them alighted in front of a dog and, running forward, flapped its wings at the animal with loud cries" ('Birds of Ireland,' p. 274).



J. Woods, Photo.]

NEST AND EGGS OF WOODCOCK.

Co. Tyrone.

It is a well-established fact that the female often bears away her chicks, one by one (held between her legs as she flies), from the locality in which they were hatched. I believe the young are thus conveyed to damper situations to enable them to learn to feed for themselves. In other words, the Woodcock transports its offspring to the haunts which it is wont to visit nightly in search of food. For it should be borne in mind that this is primarily a wading and marsh-frequenting species, which resorts to the drier cover of wooded districts simply to sleep and rest. The young are also carried off by the parent on the approach of danger, even when they are considerably grown. Incubation begins in April, less often in the latter end of March; two broods are usually produced in the season.

Geographical distribution.—Beyond our Isles the Woodcock nests over the greater part of the European Continent, as far north as Scandinavia, though it is not found in Iceland. Eastward, this species breeds in Temperate and Northern Asia, also in parts of North Africa and the adjoining Islands. Numbers reach India in the winter. Stragglers have been recorded from North America.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—The general coloration of the plumage may be described as a handsome variegated pattern of rich chestnut-grey, and blackish markings. On the top of the head and on the hind-neck the black takes the form of broad bands, separated by narrow light grey stripes; tail-feathers, chiefly black, notched on the outer webs with rufous, banded on their upper surface with dull silver-grey, and on the under surface with white; primaries, barred on their outer webs with chestnut and black; there is a considerable amount of chestnut and black about the middle of the back and on the scapulars; cheeks and throat, whitish-grey, a dark curved line stretches from the eye to the gape of the beak; front of neck, breast, abdomen, and flanks, barred alternately with light and dark markings; under tail-coverts, chiefly warm buff, with dark brown 'arrow-headed' centres.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Resembles the adult plumage except that the barring on the outer webs of the first two primaries is much more marked, and the general shade of plumage is darker; the light-coloured band on the tail-feathers is narrower than that of the adult.

BEAK. Horn-colour at the basal part, dark brown towards the point; long and straight.

FEET. Brownish.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	14.25 in.
WING	...	...	...	7.25 „
BEAK	...	...	...	2.75 „
TARSO-METATARSUS	...	...	...	1.5 „
EGG	...	...	...	1.75 × 1.3 in.

GREAT SNIPE. *Gallinago major* (J. F. Gmelin).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 78; Dresser, 'Birds of Europe,' vol. vii, pl. 541; Lilford, 'Coloured Figures,' vol. v, pl. 25.

The Great or Solitary¹ Snipe is a visitant to the British Isles in small numbers. In the eastern and southern counties of England it probably appears annually in autumn and winter, but in spring it is very rare. Elsewhere in England, as well as in Scotland, it occurs seldom and irregularly. From the latter country about a dozen instances are on record; a bird obtained in Aberdeenshire, September 5th, 1905, seems to be the most recent capture (Sim, 'Zoologist,' 1905, p. 466).

In Ireland, it is very rare, and of the several reported instances of its occurrence few have been authenticated. Specimens have been taken in the following counties:—Cork, Wexford, Kildare, Galway, Mayo, Leitrim, and Tyrone. A bird obtained in the last-named county on September 8th, 1899, appears to be the most recent capture known (E. Williams).

¹ The name 'Solitary' is applied to this species because it is seldom, if ever, seen in 'wisps' like the Common Snipe.

Many of the Great Snipes, which have been obtained, have been flushed from dry soil, such as potato and clover-fields, grass, heath, and bracken, and not from marshy ground, so much frequented by the Common Snipe (A. Patterson, 'Zoologist,' 1901, p. 101, and Caton Haigh, 'Zoologist,' 1902, p. 130). In this respect the Great Snipe somewhat resembles the Woodcock in its diurnal habits.



FIG. 42.—HEAD OF GREAT SNIPE. $\frac{1}{12}$ Nat. size.

Flight.—This species may be distinguished¹ on the wing from the Common Snipe by its superior size, straighter

¹ But the Great Snipe is best distinguished by its plumage-markings. The relative sizes of the two birds is a less reliable test, especially if both are not at hand to compare, as there is much variation even in the same species. I have in my collection a large specimen of a Common Snipe which in the flesh weighed 6 ozs. and 30 grs. (Plate XXI.), and I have handled several Great Snipe weighing only $7\frac{1}{2}$ to 8 ozs. each, so that a novice, were he to judge from size alone, might mistake the two birds. The Common Snipe has only fourteen feathers in the tail, the Great Snipe has sixteen. But in the latter, two or more of the tail-feathers may be missing (shot away), when the dead bird is picked up, therefore a hasty conclusion as to the correct species should not be arrived at by this method alone. The beak, legs, and feet of the Great Snipe are relatively shorter than those of the Common Snipe, but here, again, it is necessary to examine several of the latter species owing to the large amount of existing variation in the length of these parts.

The Great Snipe, be it a large or small example, may readily be distinguished by the presence of the bold, dark barring which extends over the breast and abdomen, almost back to the tail-feathers; in the Common Snipe the abdomen is white.

and heavier flight, and expanded fan-like tail; moreover, it rises without uttering an alarm-note.

Food.—The food consists largely of insects and their larvæ, together with worms and slugs; small grit is also swallowed (Collet).

Voice.—In spring the bird gives utterance to a rather low, hoarse sound; in autumn and winter it rises and wings its way in silence.

Nest.—The Great Snipe nests on the ground "often among willow-bushes, or in some hillock above the level of a morass or forest-swamp" (Saunders). The eggs, four in number, are light brownish-grey, blotched with light and dark shades of rich purple-red and brown.

Incubation takes place about the beginning of June.

Geographical Distribution.—The European breeding-haunts of this species are in Scandinavia, Denmark, Northern Germany, Poland, and Russia southward to the Black Sea. Eastward it can be traced over Siberia.

As a bird of passage, it visits the greater part of Temperate Europe (though rarer in the Western Countries), Asia, and North Africa. In winter, numbers migrate to the Mediterranean basin, South-western Asia and South Africa.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—The Great Snipe so closely resembles the Common Snipe in its markings that a separate description seems superfluous. As already mentioned, this species is marked with conspicuous bars of brownish-black across the abdomen, and there is much more white on the lateral tail-feathers than on those of the Common Snipe.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage, but the buff markings are more distinct.

Immature, male and female.—The outer tail-feathers are barred across both webs, and show less white, and the shading of the plumage is lighter, exhibiting more rufous than in the adult. The markings on the breast and abdomen are more distinctly 'arrow-headed' than those of the mature birds.

BEAK. Light brown at the basal portion, becoming dark brownish-black towards the point.

FEET. Brownish-green; proportionately shorter than the feet of the Common Snipe.

IRIDES. Blackish-brown.

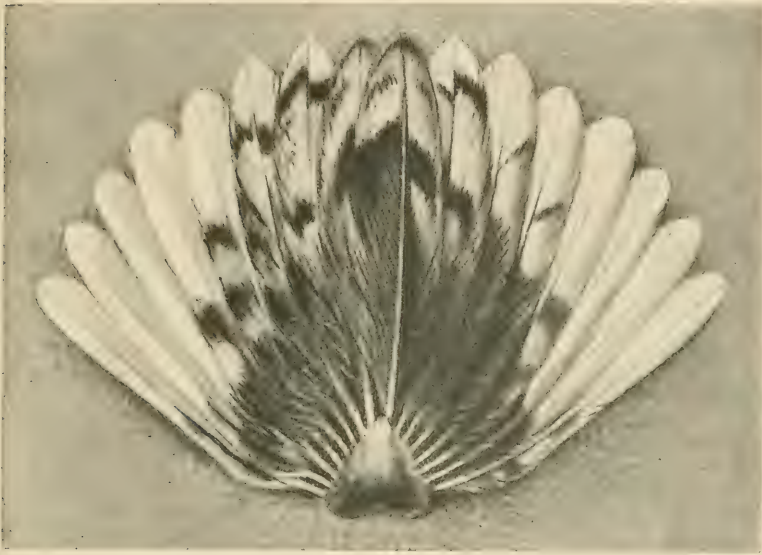


FIG. 43.—TAIL OF GREAT SNIPE. $\frac{2}{3}$ Nat. size.

AVERAGE MEASUREMENTS.

TOTAL LENGTH...	...	...	10.5	in.
WING ...	...	...	5.5	„
BEAK ...	...	...	2.5	„
TARSO-METATARSUS	...	...	1.35	„
EGG ...	...	...	1.8	× 1.25 in.

COMMON SNIPE. *Gallinago coelestis* (Frenzel).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 79; Dresser, 'Birds of Europe,' vol. vii, pls. 542, 543; Lilford, 'Coloured Figures,' vol. v, pls. 26, 27; Booth, 'Rough Notes,' vol. ii, pl. 25.

This familiar game-bird is widely distributed over our country throughout the year, becoming quite plentiful in autumn and winter, as the migrants arrive from more northern latitudes. Most of the birds which breed in Britain journey south in August: in hard weather a westerly move often takes place from Great Britain to Ireland. In September migrants having just arrived are often comparatively tame, and may be seen resting on the open marshes or ooze-slobs.¹ Snipe have been repeatedly put up from small, isolated clumps of rushes along the sea-beach of Dublin Bay; many of the birds obtained in that locality were very dark in colour and in poor condition.

Restless in its habits, and largely influenced in its movements by the state of the weather, it is not surprising to find this active bird in varied localities.

It is often met with amid furze and heather, on dry hills some hundreds of feet above the sea-level; Mr. Harvie-Brown has found it on the summits of the hills of the Outer Hebrides, while Thompson mentions it as feeding on *Zostera*-covered banks at the sea-level.

The Snipe, unlike the Woodcock, avoids woods and thickets, being content with the cover of rushes and grass, but, like the Woodcock, it prefers to rest or lurk about in such cover by day, 'flying' by night to its feeding-grounds. Hence its movements are difficult to follow except when it is flushed from the swamp and forced to take wing. I have crept on these birds unawares, and, concealing myself, have watched how they wend their way slowly through rushes or tall grass, until a bare patch of mud is reached, which they probe energetically in search of food; or, if suspicious of danger, crouch low to avoid observation. This species has been known to perch in trees; indeed, many allied wading-birds, such, for instance,

¹ Mr. W. J. Williams informs me that on September 29th, 1900, he noted a 'wisp' of some fifteen birds standing on a bare patch of sand at Portmarnock Point on the Dublin coast: other small 'waders' accompanied them.

as the Green Sandpiper, not only perch on trees, but breed in them.

The Snipe seems to depend largely on the light reflected from the moon to guide it on its night-flights to and from its feeding-grounds. With a full moon it travels far and wide, and distributes itself about the swamps, rivulets, and bog-lands of hill and dale, as well as along the ooze of our tidal estuaries, and if moonlight should fail before morning, the bird will often remain where darkness has overtaken it. In hard, frosty weather, many betake themselves to the sand-flats of our coasts, or assemble on low-lying bog-lands in the vicinity of the sea. 'Wisps,' ranging from thirty to one hundred birds, are not uncommon in these localities, but it must not be inferred, from the numbers seen together, that a migration has just taken place. Indeed, 'wisping' is rather uncommon before midwinter, when the southern migratory movement has come to a standstill. After a bright night, and in stormy weather accompanied by a heavy rainfall, the birds sleep on comparatively dry ground, such as meadow-land, islands, and shores of inland lakes. This habit is characteristic of Woodcocks also.

If the night be very dark, Snipe seldom wander far from their nesting-haunts, preferring, in the absence of moonlight, to feed by day in the marshes and bog-lands.

Food.—Small worms, insects, slugs, snails, and such small creatures as are found in soft mud, constitute the diet. When feeding, the bird walks slowly about, with its head bent low and the point of its beak almost scraping the ground. As it traverses the mud, it bores in all directions, procuring its food and eating it before withdrawing the point of its beak from the soil. The Snipe is said to have a keen sense of hearing: it is supposed to stand and listen to the movements of worms underground, and it may be seen suddenly plunging its beak into the mud, at the spot from whence the sound proceeded, and seizing its food. I doubt this theory; it is more probable that the worm makes the soil move and the bird detects this by the eye.

Voice.—When flushed from cover, a rather harsh sound resembling the syllables, *skaisk*, *skaisk*, or, as it is often syllabled, *scape*, *scape*, is uttered.

Flight.—The flight is remarkably rapid, and few of us are unacquainted with the wonderful impetus with which this bird launches itself into the air, followed by the extraordinary zig-zag movements performed on the wing imme-

diately after it has been 'flushed' from the marsh by the sportsman's dog. I have seen a startled Snipe project itself almost vertically upwards, like a rocket, from a bog over which a Hen-Harrier was searching for its prey.

In the pairing-season, the flight is accompanied by a weird sound, called 'drumming,' which resembles the puffing of a locomotive engine, heard in the distance. Most Snipe commence to 'drum' about the end of March. The sound, which first draws our attention, carries a great distance, the bird, when first seen, often appearing as a little speck in the sky. The 'drumming' grows louder as the Snipe shoots downwards, and softens off as it stays its flight before again ascending to repeat this interesting aerial manœuvre. The 'drumming' is generally supposed to be produced by the vibrations of those wing-feathers which are directly concerned with flight.

Nest.—The nest, placed on the ground, is generally well concealed from view, amid rushes, grass, or other vegetation; it is a definite and well-scraped hollow, and, as a rule, is lined with withered grass. In Ireland, where the bird breeds freely, I have found nests both on low-lying and on elevated marshes.

The eggs, four in number, vary in the ground-colour from very light olive to greenish-brown. The darker markings consist of different shades of brown in the form of blotches and streaks, which in some cases form a zone or even a confluent patch at the larger end of the egg, thus effacing from that portion the lighter ground-colour. The eggs of all the Snipes are very large for the size of the birds.

Incubation begins about the end of March, and two broods are most likely reared in the season.

Geographical distribution.—Abroad, the Snipe breeds over Northern and Temperate Europe and Asia; in winter it reaches North Africa and Tropical Asia, as far as the line of the Equator.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, dark brown, with a median stripe of light buff; stripe over the eye, light buff; cheeks, light buff, minutely speckled with black spots: from the gape of the mouth to the front of the eye is a dark brown stripe; back of neck, spotted like the



H. Brooke, Photo.]

COMMON SNIPE AND JACK SNIPE.

The bird on the left belongs to the variety known as *Ci. rissada*. The Jack Snipe (centre bird) mounted by the late Mr. E. Williams.

From specimens collected and mounted by the author.

cheeks; feathers of the middle line of the back, rich dark brown chequered with yellowish-buff; scapulars and inner secondaries, marked with longitudinal buff-coloured stripes; wing-coverts, chequered and vermiculated with brownish-black, buff, and dull greyish-white; primaries, dusky-brown: basal part of tail nearly black, terminal part, warm red-brick colour, barred near the end with dark brown; outer tail-feathers, greyish-white near their tips, but grey above, and barred with brown; throat and chin, light greyish-white; front of neck and breast, greyish-brown with darker spots; abdomen, white; flanks, barred with greyish-brown and white; upper and under tail-coverts, warm yellowish-brown with darker markings.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Resembles the adult plumage, but the gloss on the back and wings is only feebly shown, and the immature birds exhibit more rufous, especially about the neck.

BEAK. Horn-colour with a darker point; long, slender, and straight.

FEET. Greenish-brown.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	..	...	10.75 in.
WING	...	...	...	5 "
BEAK	...	...	...	2.75 "
TARSO-METATARSUS	...	...	...	1.25 "
EGG	...	...	...	1.6 × 1.1 in.

Allied Species and Representative Forms.—The large specimen, alluded to on p. 273, exhibits much buff shading and belongs to the form known as *G. russata* (Plate XXI.).

The dark variety, or Sabine's Snipe, *S. sabini*, is but a melanic type; while *G. brehmi*, with longer tail-feathers, is also only a variety.

The North American form, *S. wilsoni*, possesses sixteen tail-feathers; the Australian, *G. australis*, eighteen; and the Indian form, *G. sternura*, about twenty-two tail-feathers.

JACK SNIPE. *Gallinago gallinula* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 80; Dresser, 'Birds of Europe,' vol. vii, pl. 544; Lilford, 'Coloured Figures,' vol. v, pl. 28.

It is strange that so many still adhere to the erroneous idea that the Jack Snipe is the male of the preceding species, for the two birds are quite distinct, not only in size and plumage-markings, but also in several habits.

Unlike its larger congener, the Jack Snipe is only a migrant to our country, although it is noteworthy that a few stragglers and immature birds have been observed during the breeding-months, even throughout the entire summer. As yet there is no record of the discovery of the nest in the British Isles.

The vast majority of birds reach us during October, some earlier, though they are seldom seen before September.

In April the return journey northward takes place.

Marshy swamps, wet meadows, tufts of rushes, and less frequently ground devoid of cover, are the haunts of this bird, and though far less numerous than the Common Snipe, it is on the whole more widely distributed over Great Britain and Ireland. In some of the northern districts of Donegal, it is the more numerous species (H. C. Hart).

It is sometimes found in close proximity to the tide. The late Mr. E. Williams repeatedly procured specimens flushed from small clumps of rushes along the shores of Dublin Bay: such birds were observed generally in pairs.

Mr. F. H. Walker informs me that he has several times seen them running in front of his setter-dog, and he has watched the birds as they wended their way through rushes and grasses at a rapid pace. At times a Jack Snipe will alight on the open ground like a Sky-Lark, and then run towards a tuft of rushes, in which it will conceal itself.

Flight.—When aroused from the marsh and put to flight this species is not difficult to identify. It gets up, without a note of warning, and pursues its flight for a hundred yards or so, when it suddenly alights, and at times returns almost to the spot from which it started. Though sufficiently fast on the wing to test the aim of a good marksman, yet it does not twist in the air in the zig-

zag manner that characterises the flight of the preceding species.

Voice.—In Lapland in the spring-season the drumming of the Jack Snipe has been compared to "the cantering of a horse over a hard road" (Wolley). At other seasons, the bird appears to be remarkably silent, though occasionally it gives utterance to a short note softly produced, and only heard at very close quarters.

Food.—Small worms, grubs, caterpillars, and insects, form the staple diet; particles of sand are also swallowed. Like its congeners, the Jack Snipe frequently changes its quarters for feeding-purposes, but seems to depend but little on the light from the moon to aid it on its nocturnal flights. It is a hardy little bird, usually plump and in good condition, even during severe frosty weather.

Nest.—The nest is built on or near marshy ground, amid grasses—of which it is largely composed—and other herbage. The eggs, usually four in number, are of a light olive ground-colour, marked with dark brown spots and streaks, and are very large in proportion to the size of the bird.

Incubation takes place during the month of June.

Geographical distribution.—The Jack Snipe breeds in Lapland, Scandinavia, Northern and Arctic Russia, as well as in Siberia. On migration in autumn and winter it spreads over the European Continent to North Africa, while it occurs over Temperate and Southern Asia and as far east as Japan.

DESCRIPTIVE CHARACTERS.

PLUMAGE. Adult male nuptial.—Top of head, blackish-brown, limited on either side by a conspicuous light buff line, which curves from the base of the beak over the eye to the hind-neck; immediately above the eye is a shorter dark streak; face, greyish, marked with two dark lines, the upper extending from the beak to the front of the eye, the lower from the beak to the ear; throat, neck, and breast, streaked and spotted with shades of grey and brown; flanks and under tail-coverts, striped with brown and white; abdomen and lower breast, white; the markings on the back and wings closely resemble those of the Common Snipe, but in the Jack Snipe there is a large

amount of purple-green gloss in the feathers; the greater wing-coverts and long inner secondaries are handsomely variegated with rich chestnut-brown, black, and buff; the warm buff stripes of the scapulars and inner secondaries are even more noticeable than those of the Common Snipe: primaries, greyish-brown; tail-feathers (twelve in number), chiefly brownish, with lighter margins; upper tail-coverts, blackish-brown with buff edgings.

Adult female nuptial.—Similar to the male plumage, but duller in colour.

Adult winter, male and female.—The chestnut-brown of the back and wings is replaced to a large extent by dark ash-grey, and the blackish markings on the hind-neck are more distinct than in the nuptial plumage.

Immature, male and female.—Resembles the adult plumage, but the metallic gloss on the back and wings is not so well marked.

BEAK. Brownish; darker towards the tip; shorter in proportion than that of the Common Snipe.

FEET. Yellowish-brown.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	7.5 in.
WING	...	...	...	4.25 "
BEAK	...	...	...	1.5 "
TARSO-METATARSUS	...	...	...	0.8 "
EGG	...	...	...	1.5 × 1 in.

BROAD-BILLED SANDPIPER. *Limicola platyrhynchos* (Temminck).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 75; Dresser, 'Birds of Europe,' vol. viii, pl. 545; Lilford, 'Coloured Figures,' vol. v, pl. 30.

This species is a very rare British visitor, its migration-route being eastward of our Isles. The earliest specimen recorded was taken on Breydon Broad, Norfolk, on May 25th, 1836. Other examples have subsequently come from

the same locality (A. Patterson, 'Zoologist,' 1901, p. 102). Several birds have been taken in Sussex, especially in the neighbourhood of Rye, while examples have also occurred in Yorkshire. The two latest recorded captures appear to be as follows:—One, an immature female, taken near Littlestone-on-Sea, Kent, on August 31st, 1901 (L. A. Curtis Edwards, 'Zoologist,' 1901, p. 390); the other, an immature male, taken near Bexhill, in Sussex, on September 14th of the same year (W. Ruskin Butterfield, 'Zoologist,' 1901, p. 390).

From Ireland, but one specimen has been recorded, namely, a bird shot on Belfast Lough, co. Antrim, on October 4th, 1844 (Thompson, Nat. Hist. Irel., p. 282).

There are no records of its occurrence in Scotland.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, back, scapulars, and wings, dark brown, mixed with white and buff; throat, breast, and flanks, white, tinged with rufous and speckled with brown; abdomen, white; primaries and central tail-feathers, blackish; outer tail-feathers, pale brown.

Adult female nuptial.—Similar to the male plumage, except that the back is paler in colour, and the spotting is less profuse on the breast and abdomen.

Adult winter, male and female.—Back and wings, ash-grey; there is a narrow white wing-bar and some white on the upper tail-coverts.

Immature, male and female.—Resembles the adult nuptial plumage, but the feathers of the back and wings are more broadly margined with dull white.

BEAK. Dusky greenish-black; thick at the base, flat and wide, and decurved near the tip.

FEET. Dark olive-colour.

IRIDES. Blackish-brown.

EGGS. Greenish-brown, mottled with umber: clutch, four.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	6·5 in.
WING	...	...	...	4·25 "
BEAK	...	...	...	1·2 "
TARSO-METATARSUS	...	...	...	0·75 "
EGG	...	...	...	1·2 × 0·9 in.

AMERICAN PECTORAL SANDPIPER. *Tringa maculata*
(Vieillot).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 67; Dresser, 'Birds of Europe,' vol. viii, pl. 546; Lilford, 'Coloured Figures,' vol. v, pls. 31, 32.

This New World species, of rare occurrence along our shores, has been recorded from the eastern and southern sea-board of England more often than elsewhere in the British Isles. The first authenticated British-taken specimen, a female, was obtained at Breydon, Norfolk, on October 17th, 1830; from the same county several others have since been procured (Macgillivray, 'British Birds,' p. 69).

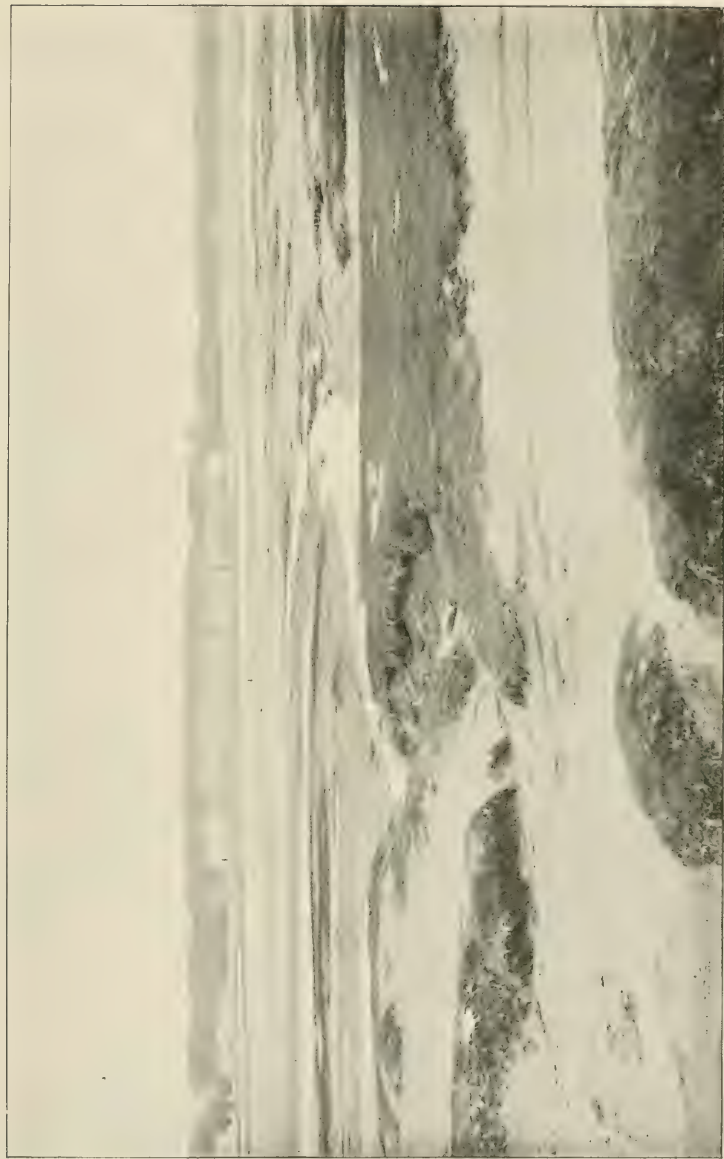
Examples have also been obtained in Suffolk, Yorkshire, Durham, Northumberland, Sussex, Kent, Devon, Cornwall, and the Scilly Isles. Among recent captures may be mentioned a specimen obtained in Suffolk on September 13th, 1900 (E. C. Arnold, 'Zoologist,' 1900, p. 521), and another obtained in Norfolk on September 2nd, 1904 (J. H. Gurney, 'Zoologist,' 1905, p. 96).

Three examples have been obtained in Scotland, the data being as follows:—One from Aberdeenshire, October 2nd, 1867 (Gray, 'Birds of the West of Scotland'); another from Dumbartonshire, November 24th, 1882 (Harting, 'Zoologist,' 1883); the third from Westray, Orkney, August 26th, 1889 (Ogilvie, 'Zoologist,' 1889).

From the Atlantic-facing shores of Ireland a few birds have been procured; one was picked up by the late Mr. E. Williams in the Dublin game-markets from among a number of Snipe. The specimen, which was very fat, was taken at Portunna, Galway, in October, 1888 (E. Williams, 'Zoologist,' 1889); two specimens were obtained in Belmullet, co. Mayo; one an immature female, in October, 1900; now in the Dublin Museum, having been lent by Mr. T. H. Hugo; the other in September, 1902, now in the possession of Mr. R. R. Leeper, of Dublin, who shot it.

It will be seen from the above data that the counties touched upon by this American bird are maritime, and that the visits took place generally in autumn and winter.

Flight.—The flight is strong and very swift, and during the breeding-season "the male may be seen taking short, low flights, with the wings held high and beaten stiffly" (Saunders).



AN ESTUARINE MUD-FLAT.

The elevated patches of soft ooze, covered with dark-green slimy seaweeds, are here and there intersected by salt-water channels and pools; a favourite feeding ground for many species of *Limicolina* birds.

Food.—The food consists of worms, small shell-fish, insects, and seaweeds. In the gizzard of the immature female bird, mentioned above as taken in Belmullet, co. Mayo, in October, 1900, I found the legs and wing-cases of small lustrous-green beetles, an entire light brown-coloured larva half an inch in length, pebbles, some measuring 2 mm. in size, and some fine sand.

Voice.—The note, heard in the pairing-season, is a muffled *hoo-hoo-hoo-hoo* (Saunders).

Nest.—The nest is built in dry situations amidst grasses. The eggs, four in number, are drab or greenish, blotched with umber-brown. In the breeding-season this species has the power of inflating the lower part of its throat, so that its breast appears unduly distended; hence the name 'Pectoral' Sandpiper.

Geographical distribution.—This Sandpiper is distributed in the breeding-season over the greater part of Northern and Sub-arctic Canada. On migration southward in autumn, it is widely distributed over the Temperate regions of the American Continent, and the great Island-Groups, its winter-range extending to lat. 40° S. in South America.

DESCRIPTIVE CHARACTERS.

PLUMAGE. Adult male nuptial.—Head, neck, and back, dark brown with rufous margins; wings, thinly barred with white; upper and under tail-coverts, dusky-brown; central tail-feathers, very dark brown, lateral tail-feathers, lighter brown; cheeks and throat, dull white striped with brown; breast, buff-coloured, streaked with brown; abdomen, white.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Resembles the nuptial plumage but there is less rufous on the back and wings, and the general shade is browner.

Immature, male and female.—The stripes on the breast are somewhat less marked than in the adult, and there is more rufous on the back and wings; scapulars and inner secondaries, margined with white.

BEAK. Greenish-black.

FEET. Dull yellowish-brown.

IRIDES. Dark-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	8	in.
WING	...	...	...	5.3	„
BEAK	...	...	...	1.1	„
TARSO-METATARSUS	...	...	...	1	„
EGG	...	...	...	1.5	× 1.1 in.

SIBERIAN PECTORAL SANDPIPER. *Tringa acuminata*
(Horsfield).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. ix, pl. 712;
Seebohm, 'Ibis,' 1893, pl. 5.

Breydon, in Norfolk, has yielded a specimen of the Old World, or Siberian Pectoral Sandpiper. The bird, an adult, was shot on August 29th, 1892 ('Ibis,' 1893, pp. 181-185, plate 5). A specimen, said to have been obtained in Yarmouth in September, 1818, is preserved in the Norwich Museum.

This species breeds in Eastern Siberia, and on migration in autumn passes along the eastern side of the Asiatic Continent and the Malay Archipelago, reaching as far as Australia, and New Zealand.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—The adult male nuptial plumage resembles that of the American bird, but in the Siberian form there is more rufous about the head, back, and breast, and the markings on the abdomen are 'arrow-shaped' and extend to the flanks.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—The adult winter plumage is much browner than in the last species, with no rufous except a tinge near the head; lower breast and abdomen, white; upper breast and throat, yellowish-brown.

Immature, male and female.—More rufous on the hind-neck, back, and wings, than in the adult nuptial plumage; the feathers of the back blacker and the margins of the scapulars and inner secondaries lighter in the immature birds; wing-coverts broadly edged with reddish-buff; chin, breast, and abdomen, white; fore-neck, sides of breast, and

lower throat, warm buff; latter streaked with black. The stripes on the breast of the immature birds are not well marked as in the American form.

BEAK. Blackish-brown.

FEET. Yellowish-ochre, tinged with olive.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	7·4	in.
WING	...	...	5·25	„
BEAK ...	...	...	1	„
TARSO-METATARSUS	...	...	1·2	„

BONAPARTE'S SANDPIPER. *Tringa fuscicollis* (Vieillot).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 71; Dresser, 'Birds of Europe,' vol. viii, pl. 547; Lilford, 'Coloured Figures,' vol. v, pl. 33.

This is another American species which on rare occasions has found its way to the British Isles.

The earliest recorded specimen was obtained in Shropshire, prior to 1839 (Yarrell, Hist. Brit. Birds). Subsequently about a dozen birds have been captured from counties in the south of England, the data being as follows:—

Cornwall; two obtained on October 13th, 1846 (Rodd, 'Zoologist,' 1846).

North Devon; four obtained in November, 1870 (C. Smith, 'Zoologist,' 1870).

Sussex; one obtained on October 8th, 1857 (Kent, 'Zoologist,' 1859); another obtained on November 12th, 1870 (Bates, 'Zoologist,' 1871).

Middlesex; one obtained in 1856 (Harting, 'Birds of Middlesex').

Scilly Isles; one obtained in October, 1854 (Rodd, 'Zoologist,' 1854); two obtained in October, 1870 (Rodd, 'Zoologist,' 1870).

One specimen has been recorded from Ireland; this is supposed, on circumstantial evidence, to have been taken on Belfast Lough, before April 15th, 1836 (Thompson, Nat. Hist. Irel., vol. ii, p. 297).

There appear to be no records as yet from Scotland.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, back of neck, back, and wings, brown, with dark centres to the feathers and rufous edgings; primaries, dusky-brown; tail, brownish, the central feathers being longer and darker than the lateral series; upper tail-coverts, chiefly white, forming a conspicuous patch; cheeks, neck, breast, and flanks, greyish-white, speckled with brown; chin, axillaries, abdomen, and under tail-coverts, white.

Adult female nuptial.—More richly coloured than the male plumage which it closely resembles.

Adult winter, male and female.—Back, brownish-grey; breast and flanks, faintly streaked.

Immature, male and female.—The feathers of the back are spotted with white and rufous; the throat and breast are distinctly shaded with buff; otherwise there is a general resemblance to the adult nuptial plumage.

BEAK. Black; short and straight.

FEET. Dark olive.

IRIDES. Blackish-brown.

EGGS. Ground-colour, rufous-drab, boldly blotched with dark brown, especially at the larger end: clutch, four (Saunders).

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	7.25 in.
WING	...	...	...	4.75 "
BEAK	.	...	...	0.9 "
TARSO-METATARSUS		...	...	0.9 "
EGG	...	...	...	1.35 × .95 in.

— — — —

DUNLIN. *Tringa alpina* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pls. 69, 70; Dresser, 'Birds of Europe,' vol. viii, pl. 548; Lilford, 'Coloured Figures,' vol. v, pl. 34.

Multitudes of Dunlins, journeying southward, appear in late summer and in autumn, about our low-lying coastlands, returning again in spring, as they push northward to their

breeding-quarters. At no time of the year is this species absent from our shores. Large numbers remain throughout the winter, and even in midsummer¹ wisps of considerable sizes, of non-breeding birds may be noticed. The Dunlin is by far the most abundant of the so-called 'Sand-Larks.' Its presence, in almost countless numbers, enlivens the dreary expanses of ooze and mud-flat which are exposed at low water.

So plentifully and widely distributed are the flocks on the beach, that the most casual observer cannot fail to acquaint himself with these active and dainty little creatures as they run hither and thither in search of food. They are nearly always on the move. At one time we find them clustered in a great assemblage on the dry sand, above high-water mark; at other times we see them darting about with lowered heads, probing their beaks intently in the soft estuarine mud. Again, they may be observed 'lining out' along the fringe of the breakers; a few, more venturesome than the rest, wade so deeply that they are almost taken off their feet, while others flit into the air to avoid the splash of the approaching wave.

Dunlins are sociable and comparatively unsuspicious in their habits, especially the immature birds in autumn.² They can often be approached close enough to detect, with

¹ I have noticed flocks, varying in numbers from thirty to several hundreds, remain throughout the summer along different parts of the British coast. On July 25th, 1900, I saw a gigantic flock feeding on the slob-lands of the Dublin coast. All the birds were in nuptial dress, with conspicuous black breasts, and were very tame.

² In the early part of the season, viz., between the latter part of July and the beginning of September, I have observed immature Dunlins so tame as to allow me to get within five yards of them.

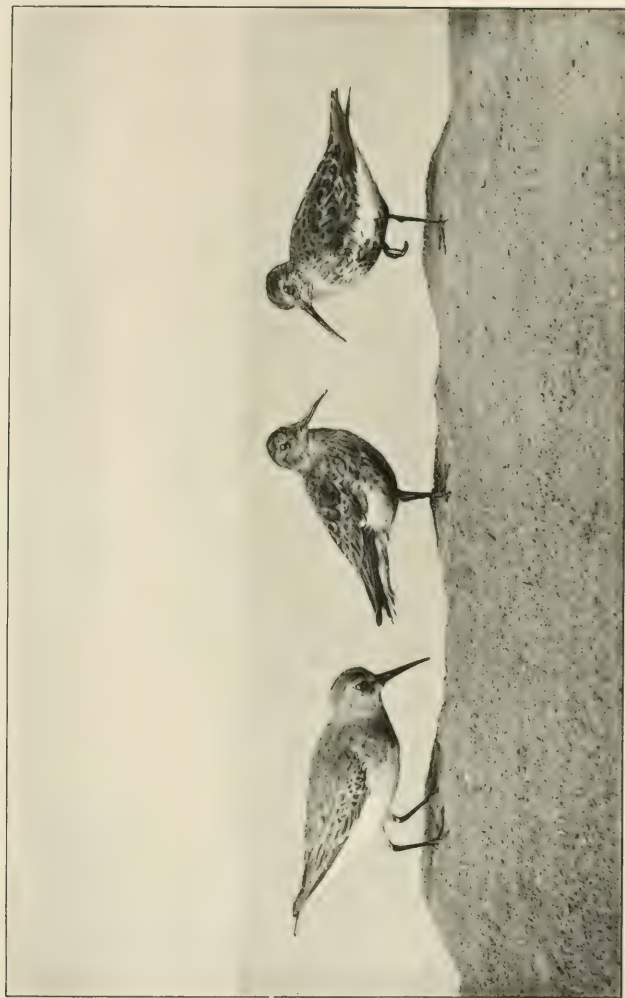
As late as November 11th, 1900, I have come across a flock of newly arrived migrants, all very tame. On April 29th, 1900, I watched thousands of tame Dunlins (nearly all in full nuptial dress), on the ooze-flats of Dublin Bay. As I lay flat on my chest, partly concealed by a tuft of rushes, I could see the birds flitting hither and thither all round me, some of them flying for a short distance out to sea, to return to the same resting-spot again.

Concerning the tameness of these birds on certain occasions, Mr. A. Williams writes:—"On October 31st, 1867, at 6 o'clock a.m., I walked quietly over the ooze-flats of Dublin Bay. In the dim morning light I discerned a large flock of Dunlins, the out-standing birds allowing me to approach within three yards of them. For several minutes I rested and admired the little creatures assiduously probing in the mud and running about almost around my feet."

the unaided eye, other shore-birds, such as Ringed-Plovers, Stints, and Sanderlings, among their numbers. But later in the season, when gunners appear on the scene, these little birds become shy and restless. In some districts it is interesting to contrast the wary birds which frequent our shores in March with the comparatively tame birds which appear in April, and later on in the spring. The former represent those which have remained with us throughout the winter, and were probably much persecuted by the shore-shooter; the latter represent migrants which have travelled from the far south, where they were unmolested by powder and shot.

When the ooze is covered by the inflowing tide, Dunlins often crowd together on sand-banks; I have also seen them rest on rocks, and grass-covered hillocks; or hide in drains and ditches adjacent to the sea.

Flight.—At first ebb the birds rise, and after wisping, muster into large flocks and fly towards their feeding-grounds. This is the time to witness their marvellous flight. The aerial gyrations performed by a great company of these birds almost surpass description. On p. 216 a flight of Dunlins in company with Ringed Plovers, has been described. It is now only necessary to refer to the extraordinary way in which each member of the flock is actuated to turn precisely at the same moment, displaying simultaneously the white under-parts, which glitter in the distance like a shower of silver coins. The movement is most wonderful and full of variety. At one moment the flock spreads itself horizontally in a sheet-like mass, suddenly it lifts itself and speeds vertically along like a great sail; the next instant all the birds are clustered together, appearing for a second like a moving bunch of grapes which shoots up and down through the air with remarkable speed. As they pass by with a mighty rush of wings, the pleasing chatter and purr from their voices can be heard distinctly. Now they seem to vanish suddenly from sight as they turn their shaded backs, and finally, as they disappear in the distance, they resemble a puff of smoke or a little dark cloud which becomes lost to view as it passes along the horizon. Many a time have I watched the precision with which an immense flock of Dunlins will suddenly split up into smaller companies, which then separate widely from one another. This movement of numbers in concert drew the remark of the old Irish sailor, "Sorra one bit of use in drilling, for they are the best soldiers on the strand."



H. Brooke, Photo.]

DUNLINS.

A—Winter plumage (Adult). B—Autumn plumage (Immature). C—Nuptial plumage (Adult).

From specimens collected and mounted by the author. A mounted by the late Mr. F. Williams.

The Dunlin is subject to considerable variation in size, length of bill, and shade of plumage. The Arctic-breeding species are duller in colour and larger than those that nest in more temperate climes. The North American form is large and possesses a long beak, while in the nuptial plumage the back and scapulars are tipped with light rufous edgings. The smaller race, described by Brehm, in 1822, as *T. schinzi*, has usually a short and straight beak. This form breeds on the Outer Hebrides, in Tiree, and other parts of West and North Scotland, and in many parts of England and Ireland. I possess a specimen with a beak barely one inch in length and almost perfectly straight (Plate XXIV., fig. 1), I obtained it from one of the midland counties of Ireland in the breeding-season. According to Cordeaux the short-billed Dunlin is often tame, and resorts "to the borders of the marsh-drains, or to the 'fittie-land' adjoining the 'muds,' in preference to the flats" (Backhouse, 'Zoologist,' 1901, p. 91). I have noted several Dunlins distinctly partial to salt-water drains about Dublin Bay, and have seen them, when disturbed, run along the edge, now and then peeping up to see if they were being approached too closely. Such birds are usually tame and slow to rise, often eluding observation by retracing their steps, or by following the course of a tortuous channel. If they rise the flight is short, generally to the nearest drain. I have examined many of these 'drain Dunlin' in the flesh and have found both long- and short-billed forms among them.¹

Food.—The Dunlin feeds by day and night. I have heard hundreds of very tame birds uttering their gentle purring note at dusk in the winter, while pattering over the soft ooze, all the while probing in search of food, close to where I was standing. They frequently feed in company with Stints, Turnstones, and other 'waders.'

Small shrimps, sand-hoppers, various insects, marine worms, and minute shell-fish, form the diet. I have generally found fine sand present in the gizzard.

Voice.—A clear note, often produced when soaring, may be heard during the pairing-season. It sounds something like *dweè-dweè*; but at all seasons when in company, the birds purr or chatter to one another, making their presence known by their trilling chorus. The several voices uttered successively and in unison produce a subdued chanting,

¹ *Vide* also 'Zoologist,' 1901, pp. 91, 156, 185, 187.

which falls pleasantly on the ear of the listener. A startled Dunlin, as it rises, gives forth a prolonged plaintive single note like *quēēze* or *whēēze*.

This species is easily tamed and at the proper season will assume the nuptial plumage (Newton, 'Dictionary of Birds,' p. 172).

Nest.—In spring the greater numbers of British-breeding Dunlins quit the sea-coast, resorting to marshy grounds and moor-lands, in both flat and mountainous districts. Indeed this species frequently resorts to considerable elevations above the sea-level. I have found the bird breeding along the shores of inland lakes, notably on Lough Sheelin, co. Cavan. In 1901, Dr. E. Blake Knox discovered several pairs nesting on the shores of one of the Westmeath lakes: the nests were built in very short grass and at some twenty paces from the lake shore ('Irish Naturalist,' 1901, p. 147). Mr. Campbell found nests in rather similar situations, *i.e.*, in short grass on the slob-lands at Inch, Lough Swilly ('Irish Naturalist,' 1901, p. 175). According to Mr. Ussher's observations the nest "is made in long coarse grass, sometimes beside lakes and rivers in the heart of the country, as in Westmeath; sometimes by the coast, in marshes adjoining the sand-hills or on reclaimed slob-lands, as in Donegal. It has been found by Mr. Ellison on the top of the Wicklow mountains, 1,700 feet above the sea, where the moor was covered with moss, stunted heather and patches of cotton-grass, and studded with small ponds of peaty water. This nest was a tiny cup-shaped hollow, without cover, in a patch of grey moss, surrounded with a few wiry bents and scraps of heather, and neatly lined with shreds of lichen, and a few scraps of heather and dry bents. In low lands the tussock of coarse grass in which the nest is placed usually overhangs the eggs, and the cup is comfortably lined with dry grass, but a small isolated bank in a northern lake contained two nests of Redshanks, one of Common Sandpiper and one of Dunlin among the green grass which was not long enough to cover the eggs" ('Birds of Ireland,' p. 284).

The eggs, four in number, are pear-shaped, and prettily marked with blotches and large specks of rich reddish-brown, on a light greenish-grey ground-colour. Incubation begins early in June, and the young are affectionately cared for by the parents; the latter will tumble and drag themselves with outspread tail and wings in front of an intruder to decoy him from their hiding chicks. When incubation

is far advanced, the female sits so closely that she will almost suffer herself to be trod upon rather than leave her nest.

At the commencement of the pairing-season I have seen two birds fly to a great height in the air, and then shoot downwards with remarkable velocity. This habit is also practised by the male when his mate is hatching.

In the northern section of England, as far south as Yorkshire, the Dunlin breeds in scattered numbers over the moors, while on the east side its eggs have been taken from Lincolnshire. It is a rare breeding-species in the south, but the nest has been found in Cornwall and in Devon, while Mr. Saunders has seen the young (at an age when they were hardly able to fly) on Exmoor, in Somerset.

In Wales, this species has been found breeding in Cardiganshire and Merioneth.

In Scotland it nests not only on the mainland, but also on many of the Western and Northern Island-Groups.

In Ireland, the eggs have been recorded from the following counties :—Wicklow, Mayo, Donegal, Londonderry, Fermanagh, Roscommon, and Westmeath.

Geographical distribution.—Abroad, the Dunlin breeds in Arctic and Temperate Europe, its eggs having been obtained as far south as Denmark, Holland, Germany, Spain, and North Italy (Saunders). Eastward, it ranges over Siberia; westward, over a large tract of the North American Continent, including Greenland. On migration, in autumn and winter, it is distributed chiefly along the flat sea-coasts (but also, in less numbers, on the inland waters) of the European Continent, reaching to Tropical Africa and Asia, and westward to Central America.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Feathers of the top of head, hind-neck, back, scapulars, and long inner secondaries, blackish, with warm rufous edgings and spots; outer secondaries, brownish, showing white on the inner webs; wing-coverts, greyish-brown; primaries, dull mouse-brown; tail, greyish-brown, except the longer central feathers which are blackish with buff edgings; cheeks, throat, and sides of neck, greyish-white, with brownish-black streaks; chin, whitish; breast, black, showing in some specimens an

admixture of indistinct fine white streaks; abdomen, flanks, and under tail-coverts, white, with a few dark streaks. In late summer, before moulting into winter-dress, much of the buff disappears from the back and wings; in fact, I have in my collection, specimens with the back nearly as black as the breast.

Adult female nuptial.—Similar to the male plumage, except that the black on the breast is sometimes less developed.

Adult winter, male and female.—Top of head, face (excepting a dull white stripe over the eye), hind-neck, back, scapulars, and wings, chiefly ash-grey; wings crossed by a narrow white bar; primaries, dark brown; chin, breast, and abdomen, pure white; front of neck, ash-grey, with darker streaks.

Immature, male and female.—Feathers of the back, scapulars, and wings, resemble those of the adult nuptial plumage, except that the buff edgings are lighter, thinner, and duller in colour; cheeks, tawny-brown; breast and neck, tawny-brown, with darker streaks; the white of the abdomen and flanks, interspersed with brownish spots.

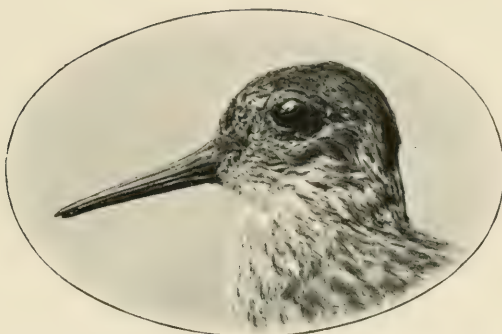
BEAK. Black, and varying considerably in length; the longer beaks show a tendency to a slight downward curve like that of the Curlew-Sandpiper, whereas the shorter beaks are straighter, like that of the Little Stint (Plate XXIV., fig. 1, and Plate XXVII., fig. 2).

FEET. Black.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	7·5 in.
WING	...	...	...	4·5 „
BEAK	...	...	...	1·25 „
(Extremes, from 0·9 in. to 1·5 in.).				
TARSO-METATARSUS	...	...	...	1 in.
EGG	...	...	...	1·35 × ·95 in.



H. Brooke, Photo.]

Fig. 1.

HEAD OF DUNLIN. Natural size.

Beak short and straight like that of the Little Stint.
From a specimen collected and mounted by the author.



H. Brooke, Photo.]

Fig. 2.

HEAD OF LITTLE STINT Natural size.

From a specimen collected by the author and mounted by the late Mr. F. Williams.

LITTLE STINT. *Tringa minuta* (Leisler).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 72; Dresser, 'Birds of Europe,' vol. viii, pls. 549, 550, fig. 1, 552, fig. 1; Lilford, 'Coloured Figures,' vol. v, pl. 35.

The Little Stint, one of the smallest and most attractive of shore-birds, visits the eastern coasts of England on its spring and autumn migrations. Though nowhere plentiful, it is not uncommon about the mud-flats of Norfolk. The great majority of the birds, however, pass east of our shores, thus only the westerly edge of the line of migrants reaches us. The Little Stint visits the east side of Scotland regularly in the autumn, and has been frequently observed in the Orkneys and Shetlands (Saxby); on the southern and western sides of Great Britain it is rarer and more irregular in its visits. It probably occurs every autumn along the northern and eastern sides of Ireland, but in varying and limited numbers. Along the rest of the Irish coast it is rare, and has been recorded only once as a spring migrant (Thompson). The visits of the Little Stint to our shores are of brief duration; there seem to be no records of it remaining throughout the winter or summer months. Immature birds generally appear between the end of August and October,¹ and I have seen more birds early in September than in any other month of the year. On September 7th, 1892, numbers appeared on the slob-lands of Dublin Bay; I saw quite sixty birds,² an unusual sight on the Irish coast. They consorted for the most part with small flocks of Dunlins on the ooze, but some kept company with Sanderlings and Turnstones on the hard, ribbed sand by the edge of the tide. Their activity was really amazing. They ran to and fro, flitting about like sprites, several times outstripping their larger companions in the race along the beach. It was amusing to see half-a-dozen of these tiny shore-birds scampering after a Turnstone which was assiduously foraging on the broken line of dead sea-wrack; so

¹ The latest date at which I have observed this species was October 7th ('Irish Naturalist,' 1899, p. 254).

² Two to four are the usual numbers that I have seen together; Thompson met with nine together, the largest group he had ever seen (Nat. Hist. Irel.).

distinctly did the two species contrast in size that one was reminded of a clutch of chickens racing after the mother. On the same day I also observed parties of Stints, each consisting of some fifteen to twenty individuals. All the above-mentioned remained but a few days on the coast, for on September 12th every one of them had departed.

On September 9th, 1897, I observed a pair of immature Little Stints running about on a grass-bank on the Dublin coast. Several Pied Wagtails accompanied them. The Stints were so tame that they little heeded a woman when she wheeled a perambulator (in which sat a noisy and fidgety infant) within a few paces of where they were feeding. With the aid of a field-glass I have, on different occasions, detected one or two Stints in a great assemblage of Dunlins.¹ It is then often difficult to secure a specimen of the former without sacrificing many lives of the latter.² Two Stints observed by Walter appeared very diminutive when contrasted with a "lordly Black-backed Gull, which, with head embedded in its shoulders, stood majestically in repose, its dignity not unbending to admit even a look at those little elf-like birds running about, apparently in pursuit of sand-flies." The 'thousands of Stints' we sometimes hear of as frequenting our shores are doubtless large flocks of Dunlins, which are hopelessly confounded with *Tringa minuta* by ornithologists of limited experience.

The flesh differs but little from that of the Dunlin and other small sea-side 'waders.' The few specimens which I have tasted had a rather fishy flavour. English epicures, however, formerly esteemed the flesh of several kinds of shore-birds a delicacy; thus we read:—

"The puet, godwit, stynt,³
The pallat that allure
The miser, and doth make
A fearful epicure."

¹ Large flocks of Dunlins should be examined most carefully with a binocular, for rare species often associate with them.

² Once I obtained a good specimen of a Little Stint by firing a charge of fine shot into a flock of Dunlins as they flew past me, eleven of the latter also falling to my gun. This method of securing a specimen I do not advocate; indeed I would not have pulled trigger at all had I not seen previously *quite a number of Stints* among the flock of Dunlins on the strand, *i.e.*, before they took wing and flew past me.

³ Dunlins in all likelihood.



H. Brooke, Photo.

LITTLE STINTS.

From specimens collected by the author.

Bird on the left mounted by the late Mr. E. Williams ;
that on the right mounted by the author.

Flight.—On the wing the Little Stint moves with remarkable velocity, cleaving the air often in a rather straight course, and reminding one not a little of a Sand-Martin in rapid flight. I have seen this bird ascend to a considerable height, fly out to sea, descend suddenly, and then skim so close to the breakers, that with each downstroke the wings almost touched the surface of the water.

Food.—Small crabs, worms, shrimps, insects (including flies), tiny shell-fish, and the seeds of plants, are eaten.

Voice.—The voice, heard on the wing, sounds as a highly pitched delicate twitter, resembling the syllables *twicky-twick, twicky-twick*. In autumn, when the birds are in flocks, their call-note resembles the confused chirping of grasshoppers (Saunders).

Nest.—The Little Stint breeds on wild moor-lands, depositing its eggs in a slight depression in the soil, lined with a few fragments of withered herbage. The four eggs resemble those of the Dunlin in ground-colour and markings, but are smaller. Incubation begins about the middle of June. Like the Dunlin this species sits closely on its eggs, and when the young are running about, it will pretend to be wounded to attract attention.

Geographical distribution.—The Little Stint breeds in Northern and Arctic Europe and Asia. Middendorff found it nesting in 1843 along the Taimyr River in Siberia, and this is the first record known of the discovery of its breeding-haunts (Proc. Zool. Soc., 1861, p. 398). However, “in July 1875 Messrs. Harvie-Brown and Seeborn were the first to take the eggs in Europe, near the mouth of the Petchora” (Saunders). On migration in spring and autumn this bird visits the coasts of Europe and Temperate Asia, reaching South Africa and Southern Asia in the cold months. Numbers sojourn during the winter in North Africa, and, to a less extent, in Southern Europe.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, hind-neck, back, scapulars, and inner secondaries, black, the feathers being edged and spotted with buff; outer secondaries and wing-coverts, chiefly brownish with white edgings; primaries, dusky-brown; tail, greyish, the central feathers being darker than the outer ones, like those of the Dunlin; upper tail-coverts, chiefly dark brown; wing, crossed by a white bar;

throat, white ; front of neck and upper breast, washed with reddish-buff, and speckled with dark brown ; lower breast, abdomen, flanks, and under tail-coverts, white ; face, greyish, with fine streaks of a darker colour ; over the eye is an indistinct white stripe.

Adult female nuptial.—Similar to the male plumage, but the spots on the breast are less distinct.

Adult winter, male and female.—The back and wings are ash-brown, and the upper breast and throat nearly white.

Immature, male and female.—Closely resembles the adult nuptial plumage, but the buff edgings of the feathers are lighter in shade ; hind-neck, ashy ; no spots on the fore-neck and chest, which are washed with isabelline-buff.

BEAK. Blackish and straight.

FEET. Blackish.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	6 in.
WING	...	...	...	3.55 „
BEAK ¹	...	...	...	0.8 „
TARSO-METATARSUS	...	...	...	1 „
EGGS	...	...	...	1 × .75 in.

Allied Species and Representative Forms.—*T. ruficollis*, the breast and neck of which are rich red in the nuptial garb, is found in Eastern Siberia.

AMERICAN STINT. *Tringa minutilla* (Vieillot).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. viii, pl. 552, figs. 2, 3 ; Lilford, 'Coloured Figures,' vol. v. pl. 37.

This species, the smallest of all the Stints, common and widely distributed over the American Continent, is a very

¹ I have examined several Little Stints, and have not found anything like the range of variation in the length of the beak that there is in that of the Dunlin.

rare wanderer to the British Isles. It has been obtained on three occasions, and twice from the same locality, several years having elapsed between the dates of the two captures.

The first bird was procured at Mount's Bay, Cornwall, on October 10th, 1853, by W. S. Vingoe (E. H. Rodd, 'Zoologist,' p. 4297).

The second and third specimens were taken near Bideford in Devon, by Mr. Rickards, September, 1869 (Harting, 'Handbook of British Birds,' p. 143), and Mr. Broughton Hawley, August 22nd, 1892 (Saunders, Proc. Zool. Soc., 1893, p. 178).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Feathers of the head and back, blackish, thinly margined with rufous; back of neck, greyish, splashed with rufous; wing-coverts, ash-grey, margined with buff and white, the latter forming an indistinct wing-bar; primaries, brown, darker at their extremities; lower back and rump, black; tail-feathers, pale grey, except the longer middle pair which are blackish; cheeks and throat, whitish; breast, ash-coloured, mottled with dark brown; abdomen, white; under wing-coverts, whitish, some of the lower ones being mottled with brown.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Back and wings, ash-grey, with the centres of some of the feathers dark purplish-brown, and the margins white; lower back and rump, blackish.

Immature, male and female.—Closely resembles the adult nuptial plumage, but the feathers of the back and wings have white margins, and the lower throat and fore-neck are washed with buff and exhibit no spots.

BEAK. Blackish-brown.

FEET. Dusky olive-brown.

IRIDES. Dark hazel.

EGGS. Creamy-yellow, blotched and dotted with dark brown, especially at the blunt end: clutch, four.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	5.25 in.
WING	...	...	...	3.5 "
BEAK	...	...	...	1.7 "
TARSO-METATARSUS	...	...	...	0.75 "
EGG	...	...	...	1 × 0.8 in.

TEMMINCK'S STINT. *Tringa temmincki* (Leisler).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 73; Dresser, 'Birds of Europe,' vol. viii, pls. 550, fig. 2, 551; Lilford, 'Coloured Figures,' vol. v, pl. 36.

Temminck's Stint is a scarce and an irregular migrant to the British Isles in autumn and winter. Most records have been made from the south-eastern side of England, extending to Cornwall and the Channel Isles. Not a few birds have visited Breydon in Norfolk, especially in autumn (Stevenson, 'Birds of Norfolk,' vol. ii, pp. 363-366). North of Norfolk this species is much rarer. It has also visited the following inland counties:—Middlesex, Cambridgeshire, Nottinghamshire, and Lancashire. Along the entire western coast of Britain it is a very rare visitant. Since 1832 only six examples have been recorded between the Solway district and the estuary of the Dee (Saunders).

In Scotland it has been recorded on a few occasions from Aberdeenshire, Banffshire, and Caithness.

In Ireland, a single specimen was obtained, in January, 1848, the only one that has been secured in midwinter in the British Isles. It was shot on a fresh-water pool near Tralee, co. Kerry. Though recorded by Thompson in his 'Natural History of Ireland,' yet the writer did not appear to have seen the bird, which was procured by Chute. However, Mr. Ussher inspected the Chute collection in Tralee in 1893, and there discovered a Temminck's Stint in winter-plumage, most likely the same bird.

This species, in winter-plumage, may be distinguished from the Little Stint by the great preponderance of uniform greyish-brown colour of the back and wings. The former is like a miniature Common Sandpiper, whereas the Little Stint strongly resembles a small Dunlin in nuptial plumage except for the black breast.

Temminck's Stint resorts chiefly to the slob-lands of tidal estuaries; less frequently it visits inland shores.

Flight.—The flight resembles that of the Little Stint.

Food.—Various kinds of insects, grubs, and worms, form the chief diet; these are often found mixed with small fragments of grit.

Voice.—In the breeding season a pleasing twittering or warbling note is uttered by both sexes, as the birds flit to and fro. The call-note in autumn is a sharp *ptirr*, often sounded as the bird ascends high in the air.

Nest.—The nest, usually situated near water, is a depression, scantily lined with sedges, grasses, or rushes. The eggs, four in number, are pale buff shading to greenish-grey, blotched with several shades of brown. The males have been obtained with large incubation patches on the breast (Collet), but females have been taken off the nest. (Popham).

Geographical distribution.—This Stint breeds in Northern Europe, viz., in Norway, Sweden, and North Russia; also in Siberia. It nests somewhat locally to the north of the Gulf of Bothnia (Wolley).

Its migration in autumn extends over the European Continent to the basin of the Mediterranean; eastward it may be traced over Tropical Africa and Asia, as far south as India.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head, neck, back, scapulars, and wings, greyish-brown, with darker stripes, especially on the back; primaries, brownish, except the outer one on each side, which is nearly white; wing, barred with a narrow white line; tail, brownish, except the two outer pairs of feathers on either side, which are white; throat and breast, buff-brown, with darker streaks; abdomen, white.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Closely resembles the winter-plumage of the Common Sandpiper (*vide* p. 330).

Immature, male and female.—Feathers of the back and wings tipped with grey; fore-neck tinged with fulvous-grey, but no brownish streaks as in the adults; outer tail-feathers not as pure white as those of the adult.

BEAK. Black.

FEET. Greenish-grey.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	5.75	in.
WING	...	...	...	3.8	,,
BEAK	...	...	...	0.6	,,
TARSO-METATARSUS	...	...	...	0.6	,,
EGG	...	...	...	1.1	× 0.8 in.

CURLEW-SANDPIPER. *Tringa subarquata* (Güldenstädt).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 68; Dresser, 'Birds of Europe,' vol. viii, pl. 558; Lilford, 'Coloured Figures,' vol. v, pl. 38.

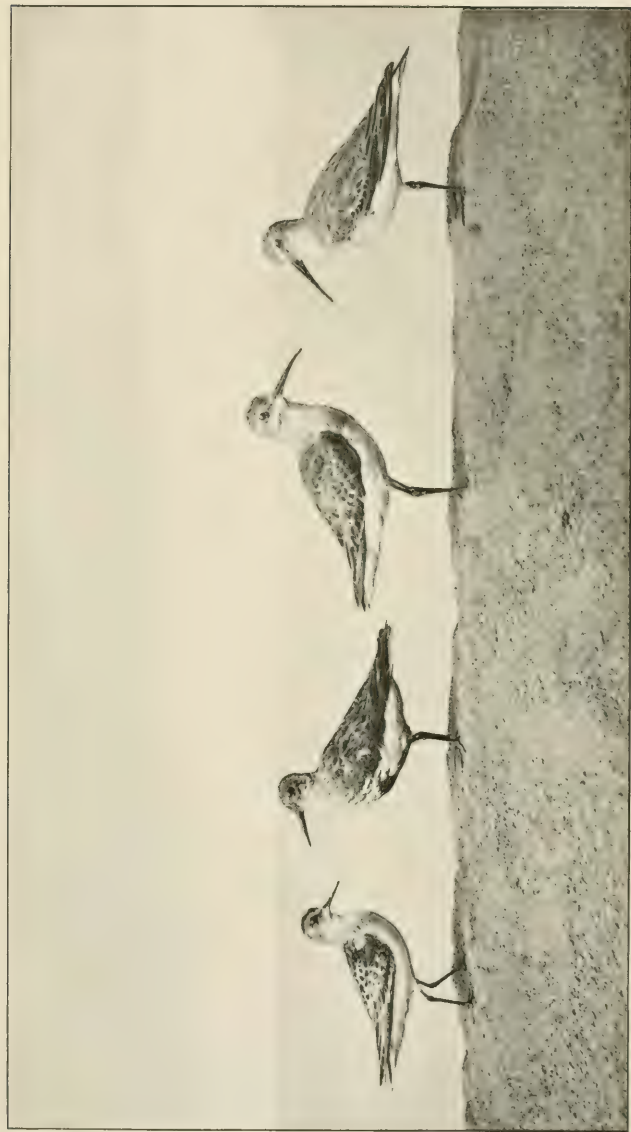
Small flocks of Curlew-Sandpipers sojourn for a short period on our shores during the spring and autumn migration. Like the Little Stint this species is exceedingly rare in midwinter and midsummer. Its numbers seem to vary annually; in some districts it is decidedly scarce one year and almost plentiful the next. The eastern and southern coasts of Great Britain are much more frequented than the opposite shores. As a visitant to the north of Scotland this bird is not constant; the same may be said of the Orkneys and Shetlands. Curlew-Sandpipers touch upon the east and north coasts of Ireland probably every year, but in varying numbers.¹ Specimens have also been recorded from Mayo, (Warren), Achill Island (Sheridan), Cork, and other parts of Southern Ireland (Ussher). I am not aware of any instance from Ireland during the vernal migration, but in England this species has been noted as early as March 19th, and birds in nuptial plumage passing north, occur along the east coast until June (Saunders).

The Curlew-Sandpiper is one of the most graceful of small wading-birds. It resembles a miniature Curlew, beautifully proportioned, with long slender legs and beak, the latter being gently decurved near its extremity. In the autumn² (usually in early September), immature birds, generally in small flocks, may be seen probing for food on the soft ooze, apart from or in company with other small 'waders.' On the strand this species bears a close resemblance to the Dunlin, but may be distinguished by its superior size, longer and more slender neck, by the more elegantly arched outline of its back, and when flying by its conspicuous white upper tail-coverts³ (Plate XXVI., fig. C).

¹ Though far less abundant than the Dunlin, yet flocks of considerable size may be seen sometimes in autumn. The late Mr. E. Williams has noticed as many as two to three hundred together on the Dublin coast, and I have several times seen over one hundred in a flock about the same locality.

² Few remain on our shores after October.

³ In the early part of the migration-season, I have observed small wisps of immature Dunlins squatting on the ooze or grass-flats. In the bright summer sunshine the feathers of their backs and wings appear



H. Brooke, Photo.] A

B

C

D

DUNLINS, CURLEW-SANDPIPER, AND LITTLE STINT.

From specimens collected by the author, and mounted by the late Mr. E. Williams and the author.

(For reference to figures see text.)

When immature Curlew-Sandpipers first reach our shores in early autumn, they, like many other Arctic-breeding birds, show little fear of the presence of man. For instance, on September 4th, 1900, I approached close to a party of ten of them and watched them gently 'pick-axing' with their curved beaks in the muddy ooze. A few, tired after their long journey, were sleeping, their beaks buried in the feathers of the wings. The active members of the party kept up a soft and rather musical chatter.

I have known a solitary Curlew-Sandpiper, when feeding with a flock of immature Dunlins, to allow me almost within grasping-range of it. Approaching closer, it was highly amusing to see its tall figure, hastily retreat with stretched legs and neck, through the flock of more dumpy Dunlin, just as a big policeman would wend his way through a crowd of excited civilians.

This bird has frequently been taken inland, viz., from the shores of lakes, rivers, and even from the drier pasturage of the hillside.¹ In August, 1902, I obtained a specimen from among a flock which were feeding on the muddy banks of the River Maine, co. Kerry, some miles from the coast. I noted a few more of the same species searching for food over wet meadow-land.

Flight.—The flight is very powerful; it is somewhat more undulating, though less twisting, than that of the Dunlin, and equally swift. I have seen Curlew-Sandpipers ascend to a great height in the air when disturbed by the presence of a hawk.

Voice.—The alarm-note, heard in autumn, is not unlike that of the Dunlin, but is shorter, less plaintive, and often distinctly two-syllabled; sounding like *twēētŷ-twēētŷ-twēētŷ*, *twēēt-twēēt*. Sometimes it is a long drawn one-syllabled note like *twēēze*. A chattering is kept up as the birds feed together.

Food.—The food consists of marine insects, small crabs, worms, and shell-fish, which are sought for by day and night. I have frequently found small glistening pebbles in the gizzard of this species.

Nest.—The nesting-haunts of the Curlew-Sandpiper were

light and almost uniform in colour, so that several times I have mistaken the birds for Curlew-Sandpipers. Putting them to flight, however, settled the question, for I then noted the absence of white over the tail, so plainly discernible as the Curlew-Sandpiper takes wing.

¹ Eight Curlew-Sandpipers were shot out of a flock on the Dublin mountains in September, 1879 (Ussher, 'Birds of Ireland,' p. 287).

almost unknown until July 3rd, 1897, when Mr. H. L. Popham obtained a nest with four eggs near the mouth of the River Yenesei. The eggs were identified as the female was shot on her nest. This nest "was a rather deep hollow in a ridge of the Tundra; the four eggs resemble some of those of the Common Snipe, though smaller" (Saunders).

Dr. Walter, in his researches on the Taimyr Peninsula, noted that this species "arrived on the $\frac{31 \text{ May}}{13 \text{ June}}$ and nested numerous in the district. Early in June they chased each other in threes and fours over the Tundra. The nests were placed in grassy places, and consisted of shallow depressions lined with a few dry straws and a white tangle. In the middle of June the nests contained full clutches of eggs. On the approach of a person the sitting bird, warned by its mate, leaves the nest quickly, and both birds remain very passive and unobtrusive. Usually the observer has to wait long before the female decides to return to her nest and thus betray its position, and often he has to wait in vain. Some individuals of this species also wander about in small flocks during the breeding-season, while later both old and young collect in large flocks and remain until late in the autumn."

The eggs were "Blunt pyriform, fine grained with a faint gloss. Ground-colour pale yellowish-white with a greenish tinge, with large and small brown to blackish-brown spots, which are more confluent, and to some extent quite confluent at the thick end, and a few washed-out pale violet-grey spots." Average measurements ranged from 34.6 by 25.1 mm. to 39.6 by 25.6 mm. (H. E. Dresser, 'Ibis,' 1904, p. 231, from translated notes of Walter's paper on "Ornithologische Beobachtungen an der westlichen Taimyrhalbinsel, vom September, 1900 bis August, 1901," published in the 'Annuaire du Musée Zool. de l'Acad. Imp. des Sciences de St. Pétersbourg').

Geographical distribution.—From observations made on this interesting species by various Arctic travellers, it appears that its breeding-grounds are in Eastern Arctic Siberia and the adjoining Islands still further north. Its breeding-range probably extends to Behring Straits. On the southern migration in autumn, the birds spread far and wide,¹ visiting the European coast-lands, as far west as

¹ It is wonderful to think that an immature bird some three months old can travel such an immense distance as from Lena Delta to Australia, and no doubt some Curlew-Sandpipers do.

the Atlantic-facing sides of Scotland and Ireland, though along the American coast they are far from common. The fly-lines become very extensive as the cold season advances, for in winter this bird is found in South America, South Africa, India, and other parts of Southern Asia, also in such remote lands as Australia and Tasmania. On the return passage northward in spring the Curlew - Sandpiper is common in many countries of Europe and Asia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, neck, back, and greater portion of wings, blackish, with variegated markings of chestnut and grey; wing-coverts, chiefly greyish-brown; primaries and tail, ash-grey; upper tail-coverts, whitish, shaded with light buff and barred with black; throat, sides and front of neck, breast and abdomen, rich chestnut, thinly striped with brown about the abdomen and flanks.

Adult female nuptial.—Similar to the male plumage, but duller in shade.

Adult male and female.—The front of the neck, breast, and abdomen are white, and the chestnut shading of the nuptial plumage disappears from the back and wings, which in winter are greyish-brown.

Immature, male and female.—Top of head, hind-neck, back, scapulars, wings, and tail, dusky greyish-brown, with very pale buff edgings; upper tail-coverts form a noticeable white patch; cheeks, sides and front of neck, and upper breast, greyish-buff, finely streaked with dull brown; throat, lower breast, abdomen, under tail-coverts, and flanks, white; over the eye is an ill-defined white stripe.

BEAK. Blackish; slightly decurved near the point.

FEET. Dark brownish-black.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	8 in.
WING	...	...	...	5.1 ..
BEAK	...	..	...	1.5 ..
TARSO-METATARSUS	...	...	...	1.2 ..
EGG	...	...	...	1.45 × 1 in.

REFERENCE TO PLATE XXVI.

(A) Little Stint. Autumn plumage (Immature).

(B) Dunlin. Nuptial plumage (Mature).

The bird in this figure belongs to the short and straight-billed form. Its head, and that of the Little Stint, are figured, natural size, on Plate XXIV.

(C) Curlew-Sandpiper. Autumn plumage (Immature).

(D) Dunlin. Winter plumage (Immature).

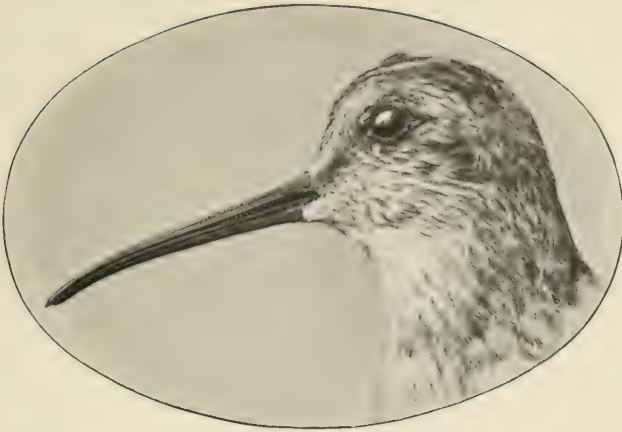
The bird in this figure belongs to the long and slightly decurved-billed form. Its head, and that of the Curlew-Sandpiper, are figured, natural size, on Plate XXVII.

PURPLE SANDPIPER. *Tringa striata* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 74; Dresser, 'Birds of Europe,' vol. viii, pl. 554; Lilford, 'Coloured Figures,' vol. v, pl. 39.

Every autumn, during September and October, the Purple Sandpiper migrates to our shores, many remaining until the following spring. It is widely distributed, yet not seen in flocks along our coast-lands, but that it is gregarious is shown by the fact that great numbers assemble together in other countries, for instance, in Norway (Collet). Unlike most small wading-birds, this hardy species shows a marked preference for rocky coasts, often wild and rugged (Plate XXVIII). Thus we find it common along the western shores of Ireland, even in districts exposed to the full force of the Atlantic gales, and, according to several observers, this species is more often met with there than elsewhere in the British Isles. Adult birds in nuptial plumage have been observed, in the middle of June, in many of the Island-Groups of Scotland (*i.e.*, Outer Hebrides and Shetlands), where they may possibly nest.¹ In Ireland, the Purple Sandpiper remains until the end of May, and even into June. Mr. Ussher mentions birds seen on May 30th, which, on examination, proved to be in full nuptial plumage, with reproductive organs in a ripe condition. I have frequently seen this species in nuptial plumage on

¹ Specimens examined from Mingulay, in the Outer Hebrides, by Mr. Harvie-Brown and Col. Feilden, were far advanced in nuptial garb, and two showed bare hatching-spots on the feathers of the breast (Ann. Scot. Nat. Hist., 1902-3).



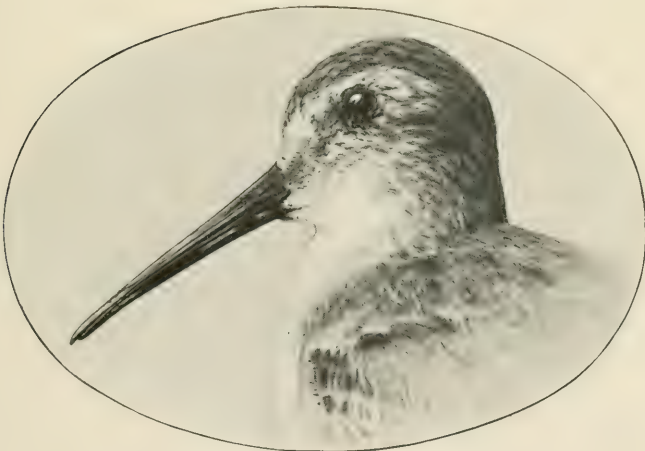
H. Brooke, Photo.]

Fig. 1.

HEAD OF CURLEW-SANDPIPER.

Natural size.

From a specimen collected and mounted by the author.



H. Brooke, Photo.]

Fig. 2.

HEAD OF DUNLIN.

Natural size.

Beak long and slightly decurved like that of a Curlew-Sandpiper.

From a specimen collected by the author, and mounted by the late Mr. E. Williams.

the Dublin coast as late as the middle of May.¹ When traversing the seaweed-covered rocks at low water, small parties of from three to five Purple Sandpipers may often be met with. They are unsuspicious little birds, and will admit of near approach and close inspection. When feeding, they dart to and fro, foraging in the seaweeds. One or two may disappear in a crevice; others may be seen running to the summit of a boulder with the nimbleness of a rat. Their hunger being satisfied, they remain on the rocks, enjoying the drenching spray as though it were but a salt-water shower-bath. I have observed small parties of Purple Sandpipers sticking to their slippery platform during a severe gale, when the spitting foam of the angry breakers fell all around. Indeed, these birds are often quite reluctant to quit a favourite rock, and will return to it after having been repeatedly frightened away. The late Mr. E. Williams has noted that in rough weather they will huddle close together on the top of a rock, where they will remain quiet, almost motionless, for a very considerable time. They frequently associate with Turnstones, less often with Redshanks and Ringed Plovers. Even then they are none the less confiding, and, at the approach of an intruder, seldom accompany their more wary companions on the wing. The Purple Sandpiper may exceptionally be met with away from the tide. It is a good swimmer, and will cross deep rock-pools of its own accord. However, it does not appear to settle down on the open sea.

Flight.—The flight is much straighter than that of other small shore-birds, and this species is generally to be seen flying low and rapidly from rock to rock.

Voice.—The Purple Sandpiper is a comparatively silent bird along our shores. It utters a feeble note which may be syllabled *weet-wit* or *tee-wit*.

Food.—Small crabs and shell-fish, which are found amidst seaweeds growing on rocks, also sand-hoppers, form the diet, while in the nesting-season insects are mainly eaten. I have frequently found coarse sand and pebbles, the latter measuring 5×4 mm., in the gizzard.

Nest.—In the high Arctic regions, the Purple Sandpiper has been observed nesting in the vicinity of the sea-coast,

¹ On May 13th, 1900, I saw four on the Dublin coast, in transition plumage: one which I obtained showed on dissection that it was a mature bird with large ova.

but in the Faroes, Wolley and Col. Feilden have found the breeding-haunts on the Fells (Saunders). The nest is a depression, scraped in the ground amid grass and such herbage, and lined with dry leaves. The eggs are dull greenish-olive, or greenish-brown and buff, blotched with reddish-brown and rather faint purplish markings. Four constitute the clutch.

Geographical distribution.—The Purple Sandpiper breeds in Northern and Arctic Europe, Asia, and America, numbers resorting to the Faroes and Iceland. On migration it visits the coast-lands of Europe, North Africa, and North America.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, greyish-brown, thinly striped with dull, light buff; hind-neck, dusky-brown; back, scapulars, and inner secondaries, glossy-black, reflecting purplish shades, the feathers being margined with rich buff and dull white; rump and central tail-feathers, dark brownish-black; lateral tail-feathers (shorter than the central pair), ash-brown; primaries, blackish; outer secondaries, chiefly white, noticeable in flight; front of neck, white, striped with dull light brown; rest of neck and breast, greyish, marked with short, dusky streaks; abdomen, whitish; flanks, spotted with brown.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Head and neck, dull greyish-black; back, scapulars, and inner secondaries, dark glossy purplish-black, the feathers being edged with dull leaden-grey; wing-coverts, nearly black, with dull white margins; chin, greyish-white; front of neck and breast, dark grey, with indistinct lighter mottlings; abdomen, whitish; flanks, boldly striped with dark grey.

Immature, male and female.—Back, scapulars, wings, and breast, dusky, the feathers being margined with dull white.

BEAK. Dull yellowish-brown near the base, darker towards the tip.

FEET. Dull naples-yellow.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	8.75 in.	Female larger.
WING	...	...	5	„
BEAK	...	...	1.2	„
TARSO-METATARSUS	...	...	1	„
EGG	...	...	1.45 × 1 in.	



A FLAT COAST STUDDED WITH ROCKS AND LOOSE BOULDERS.

At low water the Fucus-covered rocks are exposed; a favourite resort of the Purple Sandpiper and the Turnstone.

Allied Species and Representative Forms.—The Western American species, found about Behring Sea and Alaska, is *T. couesi*, while *T. ptilocnemis* is found inhabiting the Pribilof Islands (Saunders).

KNOT.¹—*Tringa canutus* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 65; Dresser, 'Birds of Europe,' vol. viii, pls. 555, 556; Lilford, 'Coloured Figures,' vol. v, pls. 40, 41.

In autumn (as early as the first week in August), considerable numbers of immature Knots arrive from northern latitudes on our shores. Adults appear later, and by October the species is plentifully distributed along tidal estuaries and those parts of the coast where large sand- and ooze-tracts are prevalent. In winter a diminution in numbers is perceptible in some places, and except at midsummer the Knot is common over the greater part of the British coast. Along the west of Scotland and in the Hebrides its numbers are rather limited.

In spring, migrants travelling northward touch upon our shores. During the month of May, birds in nuptial plumage may be seen on the east coast of England; but on the Irish coast, though many appear in spring, they are very exceptionally obtained,² or even observed, in nuptial garb. It is interesting to note that Mr. R. Warren has observed several as late as June on the Mayo coast, but as they were not in nuptial plumage it is more than probable that they were immature. The Knot is essentially a shore-bird; in exceptional cases specimens have been taken

¹ It seems doubtful as to how the Knot received its name. Camden, as long ago as 1607, and Drayton, in 1622, connected the name with that of King Canute (the abbreviated form being Cnut), it being supposed that this bird was a favourite dish in the time of the Royal Dane, or from the bird's habit of treading the margin of the water, this being connected with the legend of Canute placing himself at the water's edge and commanding the tide not to advance. The other and more probable origin is from the bird's call-note, which resembles the word Knot, repeatedly uttered.

² Mr. R. R. Leeper writes me that he obtained a fine specimen in full nuptial plumage in May, 1902, from co. Mayo.

inland. Like most other Arctic-bred 'waders,' the immature birds, on their first arrival, are almost regardless of man's presence. They are very gregarious, and a gathering of several hundreds on the slob-lands is a most interesting sight. Viewing them from a few yards I have noted how, at one time, they will all stand motionless, supporting themselves each on one leg, with their heads so sunk between their shoulders as to give them the appearance of a number of scattered grey stones. I have observed the newly arrived and fatigued birds sleeping in the bright sunshine of the noon-day, their beaks buried in their soft and puffed-out feathers. Drawing closer I have so disturbed their slumbers that numbers have hopped away from me (each on one leg) preparatory to taking flight. Suddenly they rise, and winging their way, appear to go off, but not so; they circle round and return to the self-same spot, and having alighted commence to feed actively on the slimy ooze. It is well-known that immature Knots, even when repeatedly shot at, will return to the ground from which they have been driven, a fact that the greedy and heartless shore-shooter only too readily avails himself of, when indulging in the wholesale slaughter of these innocent shore-birds.

At high water they collect into great compact masses and rest on sand-banks or patches of grass, uncovered by the tide. Oyster-catchers, Ringed Plovers, and other 'waders' frequently accompany them. From Dunlins, Sanderlings, and other small grey shore-birds, they may be distinguished by their larger size: the Redshank has much longer legs and feet.

Flight.—The Knot exhibits great power and velocity on the wing. Its long, pointed pinions are admirably adapted for the immense distances covered on migration. The 'swishing' or 'rushing' sound of several hundred wings as the birds pass overhead is as audible at eighty yards distance as the hissing of steam escaping from a locomotive. Beautiful aerial evolutions, comparable to those performed by the Dunlin, may be witnessed, especially in the spring, when the birds are massing together preparatory to moving northward.

Food.—The food, sought for by day as well as by night, consists largely of small shell-fish, especially gasteropods with pointed spiral shells: these I have found in abundance in several stomachs examined. Some of the shells measured 6 mm. in length. Worms, insects, and seaweeds, are also



KNOT.
Winter plumage.

eaten. In summer this species has been found feeding on *Saxifraga oppositifolia* (Col. Feilden).

Though often sluggish on foot, yet when searching for food the Knot displays as great activity as many other wading-birds. Large flocks usually gather along the edge of the ebbing tide where the birds may be seen running to and fro in search of food, some members of the flock, now and again, taking short flights along the strand. Concerning the habits when feeding the late Mr. E. Williams writes:—"I observed a very tame immature Knot on August 12th, 1900, on the Dublin coast. I crept so near it that I could plainly see its buff-coloured breast and upper feathers edged with golden-yellow. The bird, which was alone, was exceedingly active, advancing and retreating as the wavelets broke on the silvery beach. Sometimes it hurried into the water, wading up to its breast, quickly darting back again to the beach to catch flies which swarmed on the decaying seaweed. I was surprised at the activity of the bird on foot."

Voice.—A soft and rather muffled grunt, sounding like the syllables *knut* or *knot*, may be heard in autumn and winter, both when the birds are on the wing and when feeding on the beach.

Nest.—Until recently little was known about the nest and eggs of the Knot. Its breeding-haunts, in the far north of Greenland and Arctic America, have been reached by several explorers, but from these countries specimens of the eggs do not appear to have been secured. "The earlier explorers," says Mr. Saunders, "found birds on Melville Peninsula, and abundantly on Melville Island, one of the North Georgian or Parry group; but no eggs are known to have been brought back. On July 30th, 1876, Col. Feilden, naturalist to H.M.S. 'Alert,' obtained a male and three nestlings near a small lake on Grinnell Land in lat. 82° 33' N., while Mr. Chichester Hart, naturalist to H.M.S. 'Discovery,' had captured a brood of four in lat. 81° 44' on the 11th, and three more were taken next day: a beautiful group of the old and young being in the British Museum. A bird obtained by Gen. Greely near Discovery Harbour contained a hard-shelled egg; the Peary Expedition of 1892 found the species evidently breeding; and a female "with full-sized yolks" was shot at Point Barrow, Alaska, on July 11th."

In the Taimyr Peninsula, Walter found the Knot "by no

means a rare breeding-bird in the district. From the ^{27 May} 9 June, its loud whistle was to be heard and its pretty nuptial flight observed. It executed, now with a trembling motion of the wings, now with motionless wings gliding high in the air, wide circles, continually uttering its varied whistle. On the 9/22 June, the 17/30 June, and ^{29 June} 12 July, nests, each containing a single fresh egg, were taken (we were compelled by circumstances to satisfy ourselves with incomplete clutches), and on the ^{23 June} 6 July, a nest was found with three slightly incubated eggs. The eggs vary greatly in form, size and coloration. The nests were placed in grassy places on the Tundra, and consisted of a shallow depression lined with a few dry grass-bents and a white tangle. At the end of June and in the middle of July we secured three lots each of four young in down. The nests were all found by accident, for the incubating male or female did not leave the nest until almost trodden on, when they puffed out their feathers until they appeared almost double their normal size. They practised the usual wiles to get the intruder away, and one female even let herself be caught by a dog. The male was always most careful of the young, whereas the female, when in the vicinity, has the appearance of an uninterested spectator. Of this species also, during the breeding-season, small flocks wandered about. They joined the young birds later on and formed large flocks, which remained until late in the autumn." The description of one fresh egg was "slightly defined pyriform, fine in grain, slightly glossy. Ground-colour pale clay, marked with some large and a few small dirty-brown spots and a few small washed-out pale violet-grey spots." Measurements, 44.5×30.5 mm.

Another egg of a different clutch, also fresh, was "slightly defined pyriform. Ground-colour pale yellowish-white with a greenish tinge, sparingly marked with tolerably large and smaller dirty-brown to blackish-brown and washed-out pale violet-grey spots, which are closer together at the blunt end." Measurements, 49.8×33.8 mm. Another egg of another clutch, also fresh, was marked similarly to last but smaller in size, viz., 42.2×31.6 mm. The clutch of three slightly incubated eggs were "of the usual oviform shape. Ground-colour pale green, closely marked with small yellowish-brown to blackish-brown spots, which are chiefly drawn on the long axis of the egg, and are collected

closer, and to some extent confluent, at the blunt end. Measurements, 42.3×29.1 mm., 41.7×29.2 mm., 44.3×29.7 mm.

(H. E. Dresser, 'Ibis,' 1904, pp. 232-233, from translated notes of Walter's paper on "Ornithologische Beobachtungen an der westlichen Taimyrhalbinsel, vom September, 1900 bis August, 1901," published in the 'Annuaire du Musée Zool. de l'Acad. Imp. des Sciences de St. Pétersbourg.')

Geographical distribution.—On migration the Knot is widely distributed and undertakes tremendously long aerial voyages. On the Atlantic shores of Europe and America it is abundant, while hundreds cross the Equator-line by way of the west coast of Africa, and others find their way to Central America and the West Indies. Smaller numbers take a more south-easterly line of flight, visiting China, Japan, Australia, and New Zealand.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head and hind-neck, reddish-brown with blackish streaks; back, scapulars, and inner secondaries, blackish, the feathers being spotted and barred with rich buff, and edged with dull white; wing-coverts, brownish; outer secondaries, brownish with white margins on outer web; primaries, greyish-black; rump and upper tail-coverts, whitish, barred and chequered with brownish-black; tail, brown; cheeks, throat, neck, and breast, warm chestnut; abdomen, chestnut; flanks and under tail-coverts, whitish, with dark brownish-black markings; axillaries, white, freckled with black.

Adult female nuptial.—Similar to the male plumage, but the chestnut shading is less developed, and the axillaries are regularly barred with black.

Adult winter, male and female.—Top of head, back, hind-neck, and most of the wing-feathers, light ash-grey; tail, light ash-grey; rump and upper tail-coverts, white, variegated with black; primaries, greyish-black; cheeks, throat, front of neck, upper breast, and flanks, streaked and spotted with dark greyish-brown; lower breast, abdomen, and under tail-coverts, white, the latter showing thin hair-like lines of black; chin, whitish; eye-stripe, greyish-white.

Immature, male and female.—Top of head, hind-neck, back, scapulars, and wings, ash-grey, the feathers being edged with blackish and buff; breast and abdomen, suffused

with light yellow-buff; throat and front of the neck also show a buff ground-colour, streaked with greyish-brown; chin, whitish; tail and primaries resemble those of the adult.

BEAK. Black; straight.

FEET. Dull olive-green.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	10	in.
WING	..	...	...	6.5	„
BEAK	...	...	...	1.25	„
TARSO-METATARSUS	...	...	...	1.25	„
EGG	...	...	...	1.75	× 1.2 in.

Allied Species and Representative Forms.—*T. crassirostris*, which has a black breast and abdomen in the nuptial plumage, is the Eastern representative and is found in Arctic Siberia: this bird migrates across the Asiatic Continent to India and other parts of Southern Asia in winter, where it meets our own species.

Note.—I have known several Knots to live very well in captivity in company with other shore-birds. They can accustom themselves to eat chopped meat, softened grain and morsels of vegetable matter.

SANDERLING. *Calidris arenaria* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 66; Dresser, 'Birds of Europe,' vol. viii, pls. 559, 560; Lilford, 'Coloured Figures,' vol. v, pl. 42.

This pretty little shore-bird is tolerably common on our sandy coasts, being absent only for a short time in summer during the breeding-season. The migratory move begins early in August,¹ or even at the latter end of July, but the

¹ As early as August 5th, I have seen for many successive seasons, flocks of Sanderlings on the Dublin coast, numbering upwards of one hundred birds. Many which I examined in the flesh, were mature, though it is not likely that they had returned from breeding. These

majority of birds do not reach us until a few weeks later. The Sanderling is fairly plentiful in suitable localities in September and October, the flocks consisting chiefly of immature birds. In midwinter a general decrease in numbers on our shores is apparent, but even then this species is far from being uncommon. During spring¹ the numbers are again increased by the influx of migrants from more southern countries, many of which appear in full nuptial plumage on the Irish, as well as on the English coast.

Firm, clean stretches of sand,² uncovered by seaweed, are the chief resorts of this species (Plate XXX.). In this respect it differs markedly from the Dunlin, Knot, Redshank, and other wading-birds, which are equally partial to the soft, slimy, ooze-covered tracts in proximity to our tidal estuaries. Only in exceptional cases are the shores of inland lakes and rivers frequented.

Flocks of Sanderlings in full winter plumage³, feeding on the strand, afford an interesting and attractive sight. They run nimbly to and fro, moving like little white dots over the sombre, grey sands. In storm or calm they are alike in activity. Away they go, pattering over the sands, until the

early 'non-breeders,' which always preceded the advent of the immature birds, quitted the strand after resting a few days. Mr. A. Williams writes me that on several different occasions during the month of July of the present year, he observed Sanderlings on the Dublin coast, some of the flocks numbering up to fifty birds. On August 11th, 1906, at 12.30 p.m., I observed a Sanderling fly round and finally alight on the s.s. "Southwark" on which I was a passenger. I was able to approach within two yards of the bird, though I was unsuccessful in capturing it. It was an adult in nuptial plumage, and judging from its flight it was fairly exhausted. It left the vessel and I did not see it again. When it first appeared we were 490 miles from Liverpool, outward bound for Montreal; lat. 56° 20' N., long. 18° W., North Atlantic.

¹ Though less plentiful in some districts in spring than in autumn, yet on many parts of the Irish coast I have seen larger numbers in May than in September.

² On the western shores of Ireland, where there are immense stretches of sand, this species is more plentiful than on the eastern (Ussher).

³ In this species the winter plumage is often assumed as early as September, and retained until June. I have examined Sanderlings shot on the east coast of Ireland on September 15th and 24th, in full winter plumage. On the coast of Yorkshire I have seen Sanderlings still in winter plumage, as late as June 1st, while in the same flocks were birds in summer and transition dress.

wind catching them sideways blows them along the beach, often knocking them head over heels, and even whirling them on to the fringe of the breakers. Then, only, do they fly away to seek shelter in calmer quarters. Although frequently seen by themselves, these birds are sociable, and will hunt for food over acres of beach, in the company of other 'waders,' especially Ringed Plovers and Turnstones. From the latter two species the Sanderling is easily distinguished by the light 'pearl' or 'french' grey colour of its back and wings, which no other small 'wader,' save the Grey Phalarope exhibits. The reddish-brown nuptial dress is much less noticeable, and during the spring and summer months a Sanderling might easily be mistaken on the shore for a Dunlin; the black breast of the latter is, however, a most distinguishing mark. Small parties of Sanderlings, numbering from four to eight, frequently associate with more than double the number of Ringed Plovers and Turnstones.¹ It is easy to pick out the Sanderlings apart from the distinction of their characteristic plumage; they run much faster and are altogether more active.

It is most interesting to watch the little creatures lightly tripping along the water's edge, some halting to indulge in the luxury of a splashing and hurried bath, others racing into the water and out again, with all speed, to escape a drenching from the breaking waves. One or two drop out of the ranks in order to secure a shrimp or worm. Away they race after their companions for fully thirty yards without stopping, as if suddenly propelled by clockwork, and now having joined company, the merry party move rapidly onward until they can be discerned in the distance only as tiny moving specks.

Immature birds are very tame in autumn; indeed throughout winter and spring, unless persistently molested, they are not particularly wary.² Dense flocks are not common: even when numbers are quietly resting on the dry shingle, during high water, they are generally scattered fairly wide apart.

Flight.—This species is swift and strong on the wing;

¹ A common sight in winter is about forty Ringed-Plovers, a dozen or more Turnstones and about half a dozen Sanderlings feeding together on the strand.

² Most of the birds which remain on our coasts during winter are immature.



A SAND-FLAT AT EBB TIDE.

Here the sands, which at full tide are washed by the open sea, are 'ribbed' and firm. The broken dark line in the foreground, composed of corals, cinders, bits of shells, &c., indicates the limit of high water mark. Sanderlings, which seldom frequent the soft sinking ooze, are particularly partial to this kind of beach.

the flight is comparatively straight, so that a passing flock will not display the same fantastic aerial patterns as are exhibited by many other shore-birds, notably by Dunlins. In winter the Sanderling is easily recognised on the wing by the general white colour, not only of its under, but also of its upper parts. Hence, in sunshine, a flock displays a constant brilliant or glittering appearance in the air as long as the birds are visible, differing from Dunlins, which seem almost to disappear for an instant when they turn their darker backs.

Voice.—When unsuspicious of danger, the Sanderling is a rather silent little bird. In spring I have heard a gentle twitter going on at intervals among the feeding flocks. When alarmed a single sharp and shrill note is uttered which sounds like *wick*, or *swink, swink*. It may be compared to a somewhat subdued alarm-note of a Chaffinch.

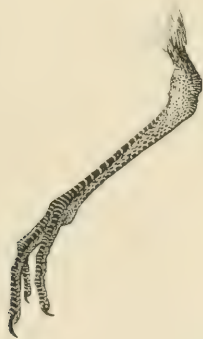


FIG. 44.—LEFT FOOT OF SANDERLING. Nat. size.

Food.—In autumn, winter, and spring, the food consists of minute shrimps, shell-fish, and worms. In the gizzards of several birds I found sand coarser than that usually swallowed by the Dunlin. Many minute bivalved shell-fish, unbroken, and measuring 4 mm. in their greatest diameter, were also present. I have also detected quantities of sand-hoppers and nothing else: and in other gizzards the remains of small black-beetles in a fine state of division.

At its breeding-grounds this species has been found feeding largely on *Sarcifraga oppositifolia* (Col. Feilden).

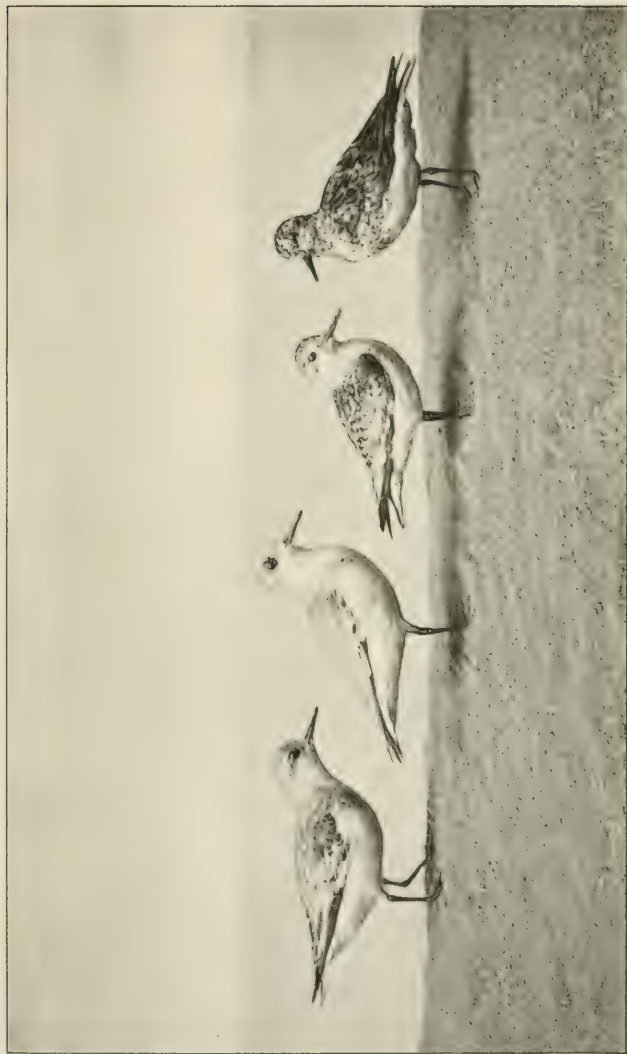
An adult Sanderling which I presented to the Dublin Zoological Gardens soon became very tame and grew fat on softened bread, minute seeds, and chopped meat. It enjoyed the society of a Knot and a couple of Turnstones, which occupied the same aviary. After feeding it would stand with one leg gathered up among the breast-feathers. It often remained an hour in this attitude, and when disturbed would at first lazily hop about on one leg as if lame, a common habit of many wading-birds.

It did not assume its full winter-plumage until early in February, and retained it until the middle of May. It was deposited in the aviary on August 7th, 1900, its plumage then being in a transition stage from nuptial to winter; it was accidentally killed on July 2nd, 1901, having half moulted into nuptial dress.

Nest.—The nest is a depression, usually scraped in the barren soil of the high Arctic regions. The eggs, four in number, are olivaceous in ground-colour, blotched and spotted with various shades of brown.

Dr. Walter observed that the Sanderling appeared on the Taimyr Peninsula "about the ^{28 May}_{10 June}, and in the middle of June one could observe its breeding-evolutions. The male rises with quivering wings about ten feet above the ground, at the same time uttering a harsh note, *trrr-trrr-trrr*, and then descends. The nests, found late in June and early July, contained four eggs each in three cases, and three eggs in one case. The nest was placed, unlike that of the other waders, which affected the grass-covered portions of the Tundra, between bare clay lumps on moss, and consisted of a shallow depression lined with a few dry straws and a white tangle. In two cases the male, and in two the female, was incubating. On the 16/29 July, when the young in down were taken, the male showed anxiety, but the female was not seen. During the breeding-season some of these birds wandered about in small flocks. This species remained until the end of August."

The eggs were "Blunt pyriform, fine-grained, with a faint gloss. Ground-colour, pale yellowish-white, with a very pale greenish tinge, and somewhat marked with small yellowish-brown and dark brown spots; a few indistinct light violet-grey markings; at the larger end a few blackish dots and streaks." Average measurement ranged from 33.1 by 24.4 mm. to 38.2 by 24.7 mm.



H. Brooke, Photo.

SANDERLINGS.

A Winter plumage (Immature), B Winter plumage (Adult), C Autumn plumage (Immature), D Nuptial plumage (Mature).

From specimens collected and mounted by the author.

(H. E. Dresser, 'Ibis,' 1904, pp. 229-230, from translated notes of Walter's paper on "Ornithologische Beobachtungen an der westlichen Taimyrhalbinsel, vom September, 1900 bis August, 1901," published in the 'Annuaire du Musée Zool. de l'Acad. Imp. des Sciences de St. Pétersbourg.')

Geographical distribution. — The Sanderling has also been found nesting, and the eggs have been obtained by several travellers on many of the Island-Groups in the far north of Arctic America, Asia, and Europe; in fact it has almost a circumpolar distribution in summer. It appears to have bred in some districts of Iceland as well as in Greenland. On migration in autumn, it is widely distributed over the coast-lands of Temperate Europe, Asia, and America; while as the season advances towards winter, hundreds journey to the Southern Hemisphere, ultimately finding suitable quarters in Southern Asia, Africa, and America, as well as in Australia and many of the Island-Groups in the Southern Pacific and Atlantic Oceans.¹ Like the Knot no doubt this bird undertakes vast journeys on the wing in spring and autumn. It probably breeds in great numbers in Polar regions hitherto unexplored by man.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, back, scapulars, inner secondaries, and wing-coverts, variegated with black,² warm chestnut,³ and grey; rest of head, neck, and upper breast, of similar shades, but the dark markings are in the form of spots, exhibiting a finely freckled appearance; primaries, dull brown, the shorter ones showing some white near their bases; secondaries, brownish, marked with a considerable amount of white; tail, light ash-grey, except the central feathers, which are blackish; central upper tail-

¹ Yet many remain in latitudes even north of Great Britain during winter.

² I have shot adult Sanderlings in early August, in which the rich chestnut shade had disappeared to such an extent, that the back exhibited almost a uniform black colour.

³ I have shot and examined Sanderlings in spring, in full nuptial plumage, in which the chestnut shade predominated so much that the back, head, and breast, displayed chiefly a rich brick-red colour; other specimens (usually females) obtained at the same time of year also in full nuptial garb, displayed a predominance of grey and black, the chestnut colour being much subdued.

coverts, variegated like those of the back; lateral ones, white; lower breast, abdomen, and under tail-coverts, pure white.

Adult female nuptial.—Similar to the male plumage, except that the rufous shading is duller, the fore-neck being marked with blackish streaks.

Adult winter, male and female.¹—Top of head and hind-neck, light bluish-grey finely pencilled with black lines; back, scapulars, and inner secondaries, light bluish-grey, with indistinct darker streaks; wing-coverts, barred with black and white; primaries, blackish, the shorter ones showing white near their bases; secondaries, chiefly white; tail, greyish-white, the central feathers darker; forehead, cheeks, throat, rest of neck, breast, abdomen, and under tail-coverts, pure white; there is also an indistinct white line over the eye, and there are a few grey feathers along the sides of the breast; birds in their first year's winter dress are somewhat darker in shade in the upper parts and the inner secondaries are variegated with black and white, and are shorter in length.

Immature, male and female.—Top of head, hind-neck, back, scapulars, and inner secondaries, variegated with black and whitish-buff; wing-coverts, greyish, barred with white, and spotted with black; cheeks, throat, breast, abdomen, and under tail-coverts, white; the breast and cheeks being washed with pale yellow-buff; over the eye is an indistinct whitish stripe; tail and primaries resemble those of the adult.

BEAK. Blackish; straight, and varying but little in length.

FEET. Black; hind-toe absent, a noticeable feature.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	8 in.
WING	...	...	...	4·7 „
BEAK	...	...	...	1 „
TARSO-METATARSUS	...	...	...	1 „
EGG	...	...	...	1·4 × 1 in.

¹ I have specimens in my collection in almost full winter-plumage shot in the month of August.

RUFF. *Machetes pugnax* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 61; Dresser, 'Birds of Europe,' vol. viii, pls. 557, 558; Lilford, 'Coloured Figures,' vol. v, pls. 53, 54.

As a British bird this remarkable species is much rarer than it was some fifty years ago. It formerly bred about the fen-districts of England in considerable numbers, and was captured and fattened for table-use. Collectors have greatly reduced the numbers by systematically destroying the breeding-birds, while drainage of the swampy districts so much resorted to, has resulted in further diminution in numbers. The Ruff is better known at the present day as a passing migrant, more abundant in autumn than in spring. Not a few birds have been obtained in late autumn, and even in midwinter.¹ It is much rarer along the west side of Great Britain (including Wales) than on the east coast, albeit single birds have been obtained from time to time in the Outer Hebrides (Harvie-Brown), as well as along the western shores and islands of Ireland. I have several autumnal records, from the Dublin coasts, which go to show that this species is a more regular visitor to that locality than was formerly supposed ('Irish Naturalist,' vols. viii. and ix.).

Though generally scarce in Ireland, yet this bird has been recorded from at least eighteen counties, having been taken inland as well as on the coast (Ussher).

The majority which visit us in autumn are chiefly immature, occurring in pairs, and frequenting low-lying coast-lands. The late Mr. E. Williams, who obtained a pair of Ruffs on August 28th, 1898, on the Dublin coast, noted their superficial resemblance, when flying, to Bartailed Godwits, the latter often going in pairs when they first migrate to our shores.

As a vernal migrant in nuptial plumage, the Ruff is now very seldom seen in our Isles.

It is not altogether a bird of the coast. Away from

¹ On October 11th, 1889, I received from Mr. F. H. Walker a fine male specimen (immature), obtained on the Dublin coast. The bird, now in my collection, is of particular interest, as it is in full winter-plumage.

Mr. R. M. Barrington has kindly shown me a Ruff in his collection, which was obtained in the Cork markets in February, 1896.

the tide it is partial to swamps and bog-land frequented by Snipe and other game-birds; moreover, it has been repeatedly observed on moor and hill, and has several times fallen to the gun of the grouse-shooter.

It is a rather conservative bird, associating principally with its own kind, though at times it accompanies other 'waders' on the sea-shore.

Flight.—The Ruff usually flies low and swiftly, but like other shore-birds it may be seen ascending to a considerable height.

Food.—The food consists largely of insects, worms, and vegetable matter. I have generally found fine gravel present in the gizzard. Dr. Scharff detected bits of the shells of sea-snails, vegetable substance like marine seaweed, minute seeds of plants, and the bristles (*setæ*) of marine worms, in the stomachs of several Ruffs which he kindly examined for me. Gravel (the largest pebbles of which measured 4 mm., the average being 2 mm.), and sand were also present. Ruffs in captivity have been fattened on boiled wheat or bread and milk (Saunders).

It is considered a very edible bird. It may be more palatable than some shore-birds, but judging from the immature specimens which I have tasted, I must confess that I should prefer to eat bird-flesh with a less pronounced flavour of brine and fish.

Voice.—In the breeding-season, a low croak may be heard, uttered as the birds pass back and forwards to their nesting-grounds.

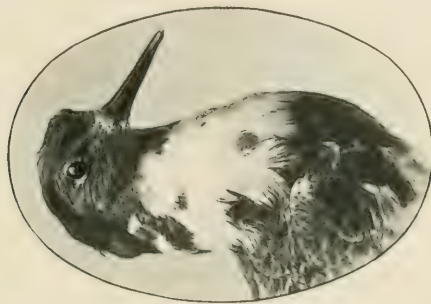
In autumn the immature birds utter a rather feeble *tu-whit, tu-whit*.

Nest.—At the onset of the nesting-season, the male ardently courts the female, prostrating himself before her with lowered head and quivering plumes, and apparently in a state of intense excitement and amour. With his own sex he is notoriously pugnacious, fighting seemingly as furiously as a game-cock, yet the combatants seldom injure each other seriously. Polygamous by nature, he tries to gain the possession of several females, which, when incubation has commenced, he completely deserts. In fact, the females alone appear to construct their simple nests in tufts of grass, in low-lying and swampy situations. The eggs, four in number, are olive, shading to greyish-buff, spotted and blotched with reddish-brown. Incubation begins about the end of May. All the time that the female is hatching

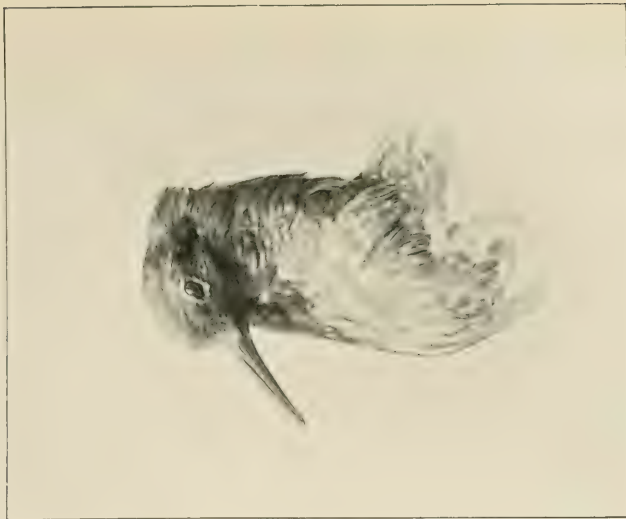


H. Brooke, Photo.]

A—'Frill,' barred and bleached with white on a black ground-colour.



B—'Frill,' mostly white with some yellow feathers; head yellow.



C—'Frill,' reddish-brown.

HEADS OF RUFFS.

One-third natural size.

From specimens collected and mounted by the late Mr. E. Williams.

and rearing her brood her spouse is leading a bachelor life with other males of his own species, with which, on the least provocation, he spars furiously.

Formerly the Ruff bred in Somerset, Cambridgeshire, Huntingdonshire, Norfolk, Lincoln, and Lancashire. Recently, viz., June 28th, 1889, two nests with eggs were found in Norfolk (Gurney, 'Zoologist,' 1889); while in 1897 a nest was found near Hoveton Broad, by Mr. Marchant (Harting). Norfolk and Lincolnshire appear to have been the headquarters of this species; in the latter county Mr. Gurney gives the following calculation of the number of nests recorded during the past forty years:—1858, about fourteen; 1868, about five; 1878, about two; 1888, about one; 1898, no nests (A. Patterson, 'Zoologist,' 1901, p. 103). At the present day it is a rare breeding-species in England.

Geographical distribution.—Abroad, the Ruff breeds as far south as the North of France, also in Belgium, Germany, and Holland. In Northern Europe it finds suitable nesting-haunts in Scandinavia and Russia, while eastward it can be traced through Northern Siberia. On migration it visits the European, Asiatic, and African Continents, travelling southward to Cape Colony, India, China, and Japan. Stragglers have been taken in North America.

DESCRIPTIVE CHARACTERS.¹

PLUMAGE. *Adult male nuptial.*—About the end of April or the beginning of May the male assumes his remarkable 'ruff' or 'neck-frill,' together with a tuft of wavy feathers, which spring from the back of the head. This plumage is retained until about the end of June. It is altogether peculiar to the adult male bird. It is interesting to note that the 'ruff' varies considerably in colour, the chief types being:—black, barred with white; rich reddish-brown, variegated with black; white, interspersed with black feathers. The reddish-brown 'ruff' appears to be the most usual colour, the pure white the rarest (Payne-Gallwey). I have in my collection a specimen with light cinnamon-coloured head and tufts, while the 'frill' is

¹ The difference in size in the sexes is so marked in this species that it may be also well to include the relative weights as follows:—

Male ...	...	...	6 oz.	Extreme (heavy)	...	10 oz.
Female	...	...	4 „	„ (light)	...	3 „

chiefly white with a few yellow feathers interspersed (Plate XXXIII. B.) I have another with glossy greenish-black head-tufts and a black and white 'ruff' (Plate XXXIII. A). In birds in which black predominates there is generally more gloss about the plumage. As a rule the colour of the 'frill' is repeated on the feathers of the back, scapulars, upper breast, central tail-feathers, inner secondaries, and wing-coverts; the primaries, however, and outer tail-feathers do not vary, being dull brown with white shafts; the secondaries are brownish with whitish edgings; the lower breast and under tail-coverts are usually whitish (Plate XXXII. A).

Adult female nuptial.—The female does not assume the 'frill.' The head and neck are greyish-brown speckled with black; feathers of the back, scapulars, and wings, blackish, margined with buff, except the outer secondaries and primaries, which resemble those of the male; tail, greyish-brown, barred with chestnut and black; front of neck, breast, and flanks, black, the feathers being edged with white; abdomen and under tail-coverts, whitish (Plate XXXII. B).

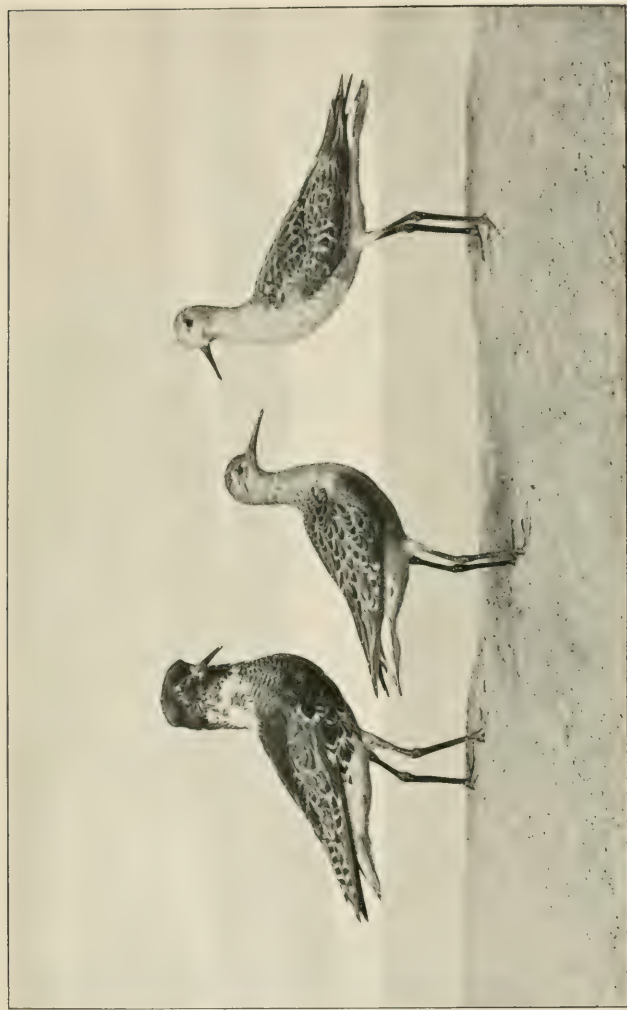
Adult winter, male and female.—Feathers of top of head, hind-neck, back, scapulars, and wings, dark ash-grey with paler margins; primaries, dull brown; lateral upper tail-coverts, white; central ones, greyish-brown; tail, chiefly greyish-brown, barred slightly near the end with darker greyish-brown and white; rest of head and throat, light greyish-white; front of neck and upper breast, ash-grey, washed with brown markings; lower breast, abdomen, and under tail-coverts, whitish.

Immature, male and female.—The sexes are practically similar in plumage (for minor details of difference in the plumages of the sexes, *vide* 'Irish Naturalist, vol. ix, p. 189). Top of head streaked with black and dark buff; hind-neck, mouse-colour; feathers of back, scapulars, and wings, blackish, edged with buff; primaries, brownish; throat, front and sides of neck, and breast, dull buff; abdomen and under tail-coverts, white; tail, chiefly greyish-brown, edged with brownish-black and buff; chin, whitish.

BEAK. Blackish.

FEET. Dull orange.

IRIDES. Blackish-brown.



H. Brooke, Photo.]

RUFFS.

- A—Nuptial plumage (Male male).
 B—Autumn plumage (Immature female).
 C—Winter plumage (Immature male).

From specimens collected and mounted by the late Mr. E. Williams.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	12.5 in.	Female, 10 in.
WING	...	...	7.25 "	" 6 "
BEAK	...	...	1.5 "	" 1.3 "
TARSO-METATARSUS	...	...	2 "	" 1.75 "
EGG...	...	...	1.8 × 1.2 in.	

BUFF-BREASTED SANDPIPER. *Tringites rufescens* (Vieillot).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 64; Dresser, 'Birds of Europe,' vol. viii, pl. 561; Lilford, 'Coloured Figures,' vol. v, pl. 43.

The Buff-breasted Sandpiper is an American species, of very rare occurrence in Britain. Like many other Transatlantic wanderers, it has been secured most often on the east sides of England and Ireland, and chiefly in autumn. The first British specimen appears to be one taken at Melbourne, near Cambridge, in 1826. Subsequently this species has been secured in Norfolk,¹ Sussex, Cornwall, the Scilly Isles, Lundy Isle, and Cumberland. A specimen is said to have been taken at Formby, in Lancashire, in May, 1829.

"As regards a supposed Caithness specimen mentioned by R. Gray, Messrs. Harvie-Brown and Buckley merely remark that the species is on Dr. Sinclair's list" (Saunders). In Ireland two examples have been taken, both on the east coast. One on Dublin Bay (Report, Dub. Nat. Hist. Soc., 1844-45). This specimen is preserved in the Dublin Museum. Another was obtained near Belfast, about October, 1864 ('Zoologist,' 1866, pp. 389 and 457). This bird is preserved in the Belfast Museum.

¹ In the 'Zoologist' for 1900, p. 110, Mr. J. H. Gurney states that a beautiful young male Buff-breasted Sandpiper was shot on the shingle at Cley, Norfolk, by Mr. Arnold, on September 8th, 1899. "Its nicely mottled upper parts are very different from the dark back of our old Museum specimen, said to have been shot in July, a few miles east of where the present one was procured." This appears to be the most recent capture recorded.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male.*—Head, neck, and back, buffish-brown, mottled with black; throat and sides of breast, spotted black; front of breast and abdomen, reddish-buff; wings, including primaries and under wing-coverts, conspicuously ‘marbled’ with black; tips of primaries and central tail-feathers of a greenish tinge; outer tail-feathers, barred with brownish-black towards their extremities.

Adult female nuptial.—Similar to the male plumage, but black ‘marblings’ on the inner web of the primaries not so distinct.

Adult winter, male and female.—It would appear that the adult winter plumage has not been described.

Immature, male and female.—Head, neck, and back, brownish, the feathers being broadly edged with dull white; breast and abdomen, paler, and spots smaller than in the adult; ‘marblings’ on the wing-feathers somewhat indistinct.

BEAK. Dull olive-green, shading to greenish-black.

FEET. Dull yellowish-green.

IRIDES. Hazel-brown.

EGGS. Pale buff or olive, marked with bluish-grey and blotches of reddish-brown and black (the markings vary considerably): clutch, four.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	8	in.
WING	...	...	...	5.25	„
BEAK	...	...	...	0.9	„
TARSO-METATARSUS	...	...	...	1.25	„
EGG	...	..	...	1.45	× 1 in.

BARTRAM'S SANDPIPER. *Bartramia longicauda* (Bechstein).

Coloured Figures.—Gould, ‘Birds of Great Britain,’ vol. iv, pl. 63; Dresser, ‘Birds of Europe,’ vol. viii, pl. 562; Lilford, ‘Coloured Figures,’ vol. v, pl. 44.

This Sandpiper is another American species which very rarely reaches our shores. It has occurred chiefly during the autumn migration. A specimen shot near Warwick in

October, 1851, appears to be the first authenticated instance. It has also been obtained in the following counties :—

Cambridgeshire ; one obtained, December 12th, 1854 (Yarrell) ; this bird is in the collection of Mr. J. H. Gurney.

Somerset ; one obtained previous to 1859 (Matthew, 'Zoologist,' 1877) ; the specimen is preserved in the Taunton Museum.

Cornwall ; one taken, November 13th, 1865 (Rodd, 'Birds of Cornwall,' p. 96) ; another procured from the same county, October, 1883 (Cornish, 'Zoologist,' 1883).

Northumberland ; one taken, November 21st, 1879 (Bolan, 'Field,' December 20th, 1879).

Lincolnshire ; one obtained, October 27th, 1880 (Harting, 'Zoologist,' 1880).

Two specimens have been procured in Ireland, namely, one in co. Galway, autumn, 1855 ; now in the Dublin Museum ; examined by the late A. G. More ; the other in co. Cork, September 4th, 1894, and now in the collection of Mr. Barrington.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, blackish, with a middle stripe of buff ; back, scapulars, and wings, barred with black and edged with buff ; lower back and rump, black ; inner web of first primary, chiefly white with brownish bars ; tail, pale buff, barred with black and edged with a broad band of white, except the central pair of feathers, which are ash-brown ; thighs and under tail-coverts, isabelline-buff ; neck and breast, buff ; lower breast, marked with blackish 'arrow-heads' ; chin and abdomen, white ; under wing-coverts and axillaries, white, barred with light brown.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—In winter the plumage displays a general dull yellowish-buff tint.

Immature, male and female.—The feathers of the head, back, and wings, are more deeply margined with reddish-buff, and the streaks on the front of the neck are less distinct than in the adult.

BEAK. Yellowish-green ; tip, dusky.

FEET. Light yellowish-grey.

IRIDES. Dark hazel.

EGGS. Pinkish-yellow, blotched with purple and reddish-brown : clutch, four.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	11.5 in.	Female slightly larger.
WING	...	6.6	„
BEAK	...	1.2	„
TARSO-METATARSUS	...	1.75	„
EGG	...	1.8 × 1.35	in.

COMMON SANDPIPER. *Totanus hypoleucus* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 58; Dresser, 'Birds of Europe,' vol. viii, pl. 563; Lilford, 'Coloured Figures,' vol. v, pl. 45.

This sprightly little creature is familiar to many as the 'Summer Snipe.' It usually arrives about the middle of April, and during the summer distributes itself widely over the British Isles as a breeding-species. About the south-east of England it occurs chiefly on migration, but it breeds freely throughout Scotland, including the Western Islands, the Orkneys, and Shetlands, and in most parts of Ireland. In September old and young betake themselves to more southern climes, save a few stragglers which may linger until November. In midwinter it is rare in our country.

This little 'wader' is not a bird of the sea-coast, although in July and August, when the young are strong on the wing, family parties, and even small flocks of fifteen to twenty birds, may be seen foraging amidst the pebbles and seaweeds of our tidal estuaries. I have noticed Common Sandpipers along several parts of the sea-coasts prior to their departure in autumn.

This species delights in the quietude of clear running brooks, the shores of which are fringed with clean gravel and sand. Its haunts are little intruded upon save by the trout-angler, with whom it is a great favourite on account of its dainty form and attractive movements. Like others of its genus (*Totanus*) it is a rather shy, yet a demonstrative little bird; it is seldom quiet for an instant, and may be seen on the ground, darting to and fro, ever and anon jerking its tail up and down, at the same time protruding and retracting its neck.

The Common Sandpiper is not gregarious. In spring

it is generally to be met with, singly or in pairs. It occasionally consorts with the lively Dipper; indeed, I have startled the two birds from the same rock, and have watched them fly together for a short distance down mid-stream.

The shores of inland lakes, both large and small, are also much frequented. In places where there is more or less constant traffic, this bird undoubtedly appears to tolerate man's presence in a marked degree. I have noted its comparative tameness along several of the larger inland lakes of Ireland, where fishermen are constantly moving about on the shores, spreading their nets.

In woody districts the Common Sandpiper often alights on the branches of trees; I have frequently seen it resting on the tops of palings, and on stone walls.

Flight.—The flight is strong and swift, but the bird also flits leisurely from rock to rock, or skims along the river with down-bent and quivering pinions.

Voice.—The well-known piping cry of *whěě-whěě-whěēt*, *whěě-whěě-whěēt*, is generally heard just as the startled bird takes wing; in the nesting-season a pleasing song-like trill is poured forth during the ascending flight.

Food.—The food consists mainly of worms and insects, in pursuit of which the Common Sandpiper, like many of its allies, can dive and swim admirably.

Nest.—The nest is generally hidden in grass, soft moss, and other vegetation. A favourite site is a bank of a river, or an island in a lake not far from the water. Where vegetation is scanty the Common Sandpiper may be found building on the gravelly or pebble-strewn shore, or in nooks between loose boulders. Less frequently trees are resorted to; a hollow in the decayed trunk or the shelter of branches sweeping the ground being utilised. In some districts this species breeds on marine as well as on inland islands. The nest is chiefly composed of grasses, and is lined with dead leaves. The eggs, four in number, are usually of a warm buff ground-colour, well spotted and blotched—in some instances also streaked—with faded grey and rich brown markings. I have found eggs light cream in ground-colour and with only a few large dark blotches, while white examples have occurred.

Incubation commences about the middle of May.

The powers of feigning lameness and performing other antics in order to distract the attention of an intruder from her brood, are well developed in the mother-bird.

The Common Sandpiper is widely distributed as a nesting-species over the British Isles, except in the north-eastern section, which is less suitable to its habits, and where it occurs chiefly on migration; it is also rather scarce as a breeding-species in South-east Ireland (Ussher).

Geographical distribution.—Abroad, it breeds over the greater part of Northern and Temperate Europe, down to the Mediterranean, while eastward it is found breeding over Northern and Temperate Asia, also in the Canary Isles. In winter its migration-range extends to Southern Asia, Africa, and as far south as Australia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, hind-neck, back, scapulars, wings, rump, and central tail-feathers, dusky greyish-brown, with darker streaks; the feathers on the back reflecting greenish and bronze-like tints; secondaries, barred and edged with white, conspicuous when the bird is flying; primaries, brown; outer tail-feathers, tipped and barred with brown and white; narrow whitish stripe over eye; cheeks, greyish; chin, whitish; throat, front of neck, and breast, greyish, thinly streaked with brown; lower breast, abdomen, and under tail-coverts, white.

Adult female nuptial.—Similar to the male plumage, but the markings are less pronounced.

Adult winter, male and female.—The back, scapulars, and wings, are nearly uniform greyish-brown, and the streaks on the throat are less distinct than in the nuptial plumage.

Immature, male and female.—The feathers of the back and wings are finely edged with dark brown and bronze-buff, and are not so glossy as in the adult. The stripes on the throat are faintly marked, otherwise the plumage generally resembles that of the adult.

IRIDES. Black.

BEAK. Brownish.

FEET. Dark greyish-green.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	8	in.	Female a little larger.
WING	...	4.25	„	
BEAK...	...	1.5	„	
TARSO-METATARSUS...	...	1	„	
EGG	...	1.45	×	1 in.



H. E. S. P. Co., Photo.

COMMON SANDPIPERS.

A—Autumn plumage (Immature).

B—Nuptial plumage (Mature).

From specimens collected and mounted by the author.

SPOTTED SANDPIPER. *Totanus macularius* (Linnaeus).

Coloured Figures. — Gould, 'Birds of Great Britain,' vol. iv, pl. 59; Dresser, 'Birds of Europe,' vol. ix, pl. 713.

Until quite recently this New-World species could not be claimed with certainty as a visitor to the British Isles. Only one well-authenticated specimen has been procured, and that in Ireland. Concerning this highly interesting addition to the British-List of American Sandpipers, it is stated in the 'Bulletin' of the British Ornithologists' Club, No. LX., that at their meeting on February 15th, 1899, "Mr. F. Curtis exhibited a specimen of the Spotted Sandpiper, which had been shot on the 2nd of February, at Finnea, co. Longford, by Mr. Frank Roberts. The bird, which proved to be a female, was very tame, and was feeding at the time in a meadow much trodden by cattle by the side of the River Finnea, within a short distance of the village."

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Resembles the adult male nuptial plumage of the Common Sandpiper, but the back and wings are much more strongly barred with blackish-brown, while the throat and breast are thickly spotted with black; there is less white on the inner secondaries than in the Common Sandpiper.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—The bronze tint of the back and wings, in the nuptial plumage, is replaced to a large extent by an olive-brown shade; greater part of breast and abdomen, pure white; sides of the upper breast and lower neck, ashy-brown.

Immature, male and female.—Resembles the immature and winter plumages of the Common Sandpiper, and showing more olive-brown shading than in the adults; the back and wings are barred transversely with reddish-brown and brownish-black; black spots on the breast and throat, absent.

The immature of this species has¹ "the broad sub-terminal band continuous throughout the secondaries,

¹ R. Bowdler Sharpe, Cat. Birds Brit. Mus., xxiv., p. 471.

instead of having the inner secondaries for the most part white," as they are in the Common Sandpiper.

BEAK. Upper segment, greenish; lower segment, dull yellow.

FEET. Yellowish-pink.

IRIDES. Hazel.

EGGS. Light yellowish-brown, with dark brown and greyish blotches: clutch, four.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	7	in.
WING	...	...	...	4·2	„
BEAK	...	...	...	1	„
TARSO-METATARSUS	...	...	...	0·75	„
EGG	...	...	...	1·3	× 0·95 in.

WOOD-SANDPIPER. *Totanus glareola* (J. F. Gmelin).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 57; Dresser, 'Birds of Europe,' vol. viii, pl. 565; Lilford, 'Coloured Figures,' vol. v, pl. 47.

The distribution of the Wood-Sandpiper in our Isles is chiefly along the east and south coast of England, where single individuals or small parties annually migrate in autumn, and more sparingly in spring. It has also been observed about inland marshy districts, but is seldom met with along the west side of England or in Wales. In spring, this Sandpiper has reached the shores of Cornwall as early as April 15th.

In Scotland, it has visited Mid- and East Lothian, Aberdeenshire, as well as the west side, in the vicinity of the Clyde and Loch Lomond (Saunders).

In Ireland, it is very rare, having occurred only on a few occasions as an autumn-migrant. The first record is that of a bird shot on Calary Bog, co. Wicklow, by Mr. Smith Cregan, on August 23rd, 1885, and presented to the Dublin Museum by the Rev. Dr. Benson (Ussher, 'Birds of Ireland,' p. 296). On August 1st, 1896, Dr. E. Blake Knox noticed three on the same bog, one of which he procured (fig. 45, p. 333): two days later (August 3rd), he shot a

second specimen (E. Blake Knox, 'Irish Naturalist,' 1896, p. 275). On September 5th, 1898, a specimen was obtained two miles from Lough Cullin, co. Mayo, by Mr. Drury; (Ussher, 'Birds of Ireland,' p. 296); and on August 25th, 1899, another, shot near Tramore Bay, co. Waterford, by Mr. J. F. Knox, was identified by the late Mr. E. Williams (E. Williams, 'Irish Naturalist,' 1899, p. 231). On August 19th, 1901, Mr. W. J. Williams obtained a Wood-Sandpiper, in immature plumage, near Sutton, co. Dublin (W. J. Williams, 'Zoologist,' 1901, p. 390).



FIG. 45.—WOOD-SANDPIPER.

Photograph of the second specimen obtained in Ireland; shot by Dr. E. Blake-Knox, on Calary Bog, co. Wicklow, August 1st, 1896, and mounted by the late Mr. E. Williams.

The Wood-Sandpiper is a very elegantly-shaped bird, with neatly spotted plumage; it resembles the Green-Sandpiper in many of its habits, perching on bushes, fences, and walls. It is less shy of man's presence, and in inland districts it often seeks less secluded retreats, than the Green-Sandpiper.

Flight.—The flight is swift and rather twisting in

character, especially when the bird first rises from the marsh. It springs up with great velocity and goes off after the fashion of a flushed Snipe.

Food.—Insects and their grubs, worms, and small shellfish, constitute the diet. The flesh is not palatable and has a rather musky odour.

Voice.—The alarm-note uttered when the bird first takes wing, is sharp and clear, and may be syllabled *gikk, giff*. During courtship, a tremulous *lērō, lērō*, may be heard.

Nest.—The Wood-Sandpiper breeds both on the ground and in trees. In the former situation the nest is generally built among grasses, heather, and other coarse vegetation sufficiently tall to conceal the sitting-bird, and generally at no great distance from water. When breeding in trees, the nests of other species are utilised, thus on the Yenesei Mr. Popham found the eggs in old nests of the Fieldfare ('Ibis,' 1897, p. 104). The eggs, four in number, vary in ground-colour from a light buff to a pale green tint, spotted and blotched with reddish-brown. Incubation begins about the middle of May.

This bird has nested on very exceptional occasions in the British Isles. The following instances are on record:—A nestling found at Beechamwell, Norfolk (Gurney and Fisher, 'Zoologist,' 1846); a nest and eggs found on Prestwick Car, Northumberland, in 1853 (Hewitson, 'Eggs of British Birds,' 3rd Edition, vol. ii, p. 332); another nest found in Elginshire on May 23rd, 1853 (Evans, Ann. Scot. Nat. Hist., 1899, p. 14).

Geographical distribution.—Abroad the Wood-Sandpiper breeds over a great area of the European and Asiatic Continents, while on migration in autumn and winter it reaches as far as South Africa, India, the adjoining Islands, and Australia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, hind-neck, back, scapulars, and wings, streaked with greenish-brown and spotted with white; primaries, dull brown, the outermost with white shafts (*vide* Green Sandpiper); upper tail-coverts, white, with their centres dark; outer tail-feathers, white, the outer web being barred with brown; remaining tail-feathers, entirely barred with brown and white; neck, throat, and breast, impure white with fine streaks of ash-brown; flanks, barred similarly; abdomen

and under tail-coverts, white; axillaries, white, with small brown marks.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Somewhat resembles the nuptial plumage, but the feathers are much less spotted and streaked in winter.

Immature, male and female.—The spots on the back and wings are larger and more defined than in the adult, and the axillaries are almost pure white; the outer tail-feathers, which are white, are barred on both webs; otherwise the plumage resembles that of the adult.

BEAK. Dark brown.

FEET. Bright olive colour.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	8.5 in.
WING	...	...	...	5 "
BEAK	...	...	...	1.1 "
TARSO-METATARSUS	...	...	...	1.5 "
EGG	...	...	...	1.5 × 1 in.

GREEN SANDPIPER.¹ *Totanus ochropus* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 56; Dresser, 'Birds of Europe,' vol. viii, pl. 564; Lilford, 'Coloured Figures,' vol. v, pl. 46.

Though nowhere numerous, yet the Green Sandpiper is more common than the preceding species as a migrant to the British Isles. It is most often seen in spring and autumn, but has been met with in midwinter and midsummer. It is likely that the birds which remain with us during June and July are immature, as there is no proof that the nest has ever been procured in our country.

To the north and west of Scotland, this species is a rare visitor. Records from the Hebrides, the Orkneys, Shetlands,

¹ "The Green Sandpiper has only one large notch on each side of the posterior margin of the sternum, and was therefore placed in a separate genus, *Helodromas*, by Kaup, who further created *Rhyacophilus* for the Wood-Sandpiper" (Saunders).

and other Scottish Islands, are quite exceptional; a specimen was received from South Uist on October 31st, 1901 (Harvie-Brown, 'Avi-fauna Of The Outer Hebrides,' 1888-1902, Ann. Scot. Nat. Hist., 1902-3).

Mr. Eagle Clarke records the appearance of "one, perhaps two," between September 2nd and 8th, 1905, on Fair Isle. This appears to be the first record from the Shetlands ('The Birds of Fair Isle, Native and Migratory,' Ann. Scot. Nat. Hist., 1906, pp. 76-77).

In Ireland, the Green Sandpiper occurs chiefly as an autumn-visitor, but quite a number of birds remain during winter. As a spring or early summer-migrant it is very rare; a specimen shot on June 30th, 1903, in co. Mayo (Godfrey Knox, 'Irish Naturalist,' 1903, p. 248), and another at Malahide¹ on the coast of co. Dublin, on April 28th, 1906, appear to be the only instances recorded.

Lonely and well-wooded rivulets, skirted with stones and sandy banks, sheltered ponds, swamps, and less frequently flooded pasturage, are the haunts selected by this shy and restless bird. Solitary individuals are most frequently met with, less often pairs, and occasionally small family groups.

I know of no Sandpiper more difficult to approach; once observed, even at a distance, it takes wing, shooting up in a zig-zag manner without a moment's hesitation, and soon disappearing out of sight. Yet it is a common habit of this species to return, after a long flight, to the same spot, where the observer, if he remain concealed and absolutely quiet, can continue to make observations for a considerable time. In this way I have repeatedly watched the movements of the Green Sandpiper. During the spring of 1903, between May 3rd and June 14th, I made a series of observations of a pair of these birds, concealing myself amidst the foliage of a sheltered stream, a few miles outside the city of Sheffield. After feeding, the birds frequently flitted on to a stone wall where, for a little time, they remained motionless. At intervals they suddenly shot up into the air for a short distance, darting down again to the same stone with astonishing speed. On the wing, they

¹Mr. W. J. Williams who received this specimen, very kindly offered me the opportunity of examining it. It is a female in nuptial plumage.

displayed great activity and adroitness, the female twisting and turning to escape the addresses of the male.

This bird often takes up its abode in the same locality for weeks and months, although at other times, as pointed out by Mr. Saunders, it frequently shifts its feeding-grounds for no special reason. The late Mr. E. Williams kept it under close observation in the same locality along the River Dodder, co. Dublin, between August and December, 1889 and 1893. He observed it

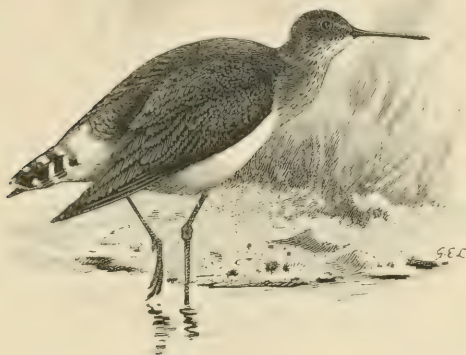


FIG. 46.—GREEN SANDPIPER.

wade without any apparent reason, and when beyond its depth, swim like a Water-hen to a shallower spot. On dry land it often stood motionless for a long time, waking up suddenly and starting to feed.

Mr. Warren has met with it on the same little pond in co. Sligo, during three different years, and Mr. Caton Haigh has made similar observations in North-east Lincolnshire ('Zoologist,' 1900, 1901).

The Green Sandpiper is not a coast-loving bird, though often resorting to maritime counties; on its first arrival it may tarry a few days on the sea-shore. Watters records a specimen which was obtained on the slob-lands of the Dublin coast, when consorting with a number of Dunlins and Knots.

Flight.—The flight is remarkably swift and powerful. The strong angular shoulders are seen to great advantage as the bird, with a twisting motion, cuts or glances through the air, alternately ascending and descending. The white feathers of the rump are very noticeable in flight.

Food.—This consists of various kinds of insects, worms, and fresh-water shell-fish. Mr. R. Patterson found fresh-water snails and shells in the stomach of an adult female.

Like that of the preceding species, the flesh has an objectionable musky smell.

Voice.—The alarm-note resembles in tone that of the Common Sandpiper, but is fuller, often doubled, and more song-like. It may be syllabled *tūi-tūi-tūi-tūi-tūi*. Mr. Ussher compares the voice, heard at a distance, to the sound produced when a person blows on a piped key.

Nest.—The Green Sandpiper breeds in quiet unfrequented districts in the vicinity of marshes, pools, or rivers. It is still more arboreal in its habits than the preceding species, only a small proportion of birds nesting on the ground; the disused nests of the Thrush, the Blackbird, the Ring-dove, or the Squirrel's drey, may be appropriated for breeding-purposes. The eggs, four in number, are light greenish-grey in colour, spotted with purple-brown.

It has been inferred that as the Green Sandpiper occurs not only singly, but in pairs in some districts in England during the entire breeding-season, a few birds may breed in our Isles; proof, however, is still wanting.

Geographical distribution.—Abroad, this species breeds in Northern and Central Europe, as far south as Germany, but in the more western countries it occurs chiefly on migration. Eastward it is found nesting over Northern and Temperate Asia, while in winter it visits India and other parts of Southern Asia, as well as the adjoining Islands. Its lines of migration along the African Continent extend to Cape Colony on the east side, though not much further than Central Africa on the west side.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head and hind-neck, dark greyish-brown; back, scapulars, and wings, glossy greenish-brown, speckled with white; rump and upper tail-coverts, chiefly white, the latter conspicuous when the bird flies; primaries, blackish, shaft of



GREEN SANDPIPER.

Showing the angular white bars or the dark axillaries.
From a specimen in the flesh kindly lent by the late Mr. E. Williams.

the outer one, dusky (*cf.* that of the Wood-Sandpiper); axillaries, smoke-black, with narrow angular lines of white (Plate XXXV.); central tail-feathers, white at their basal portions, and broadly barred with black near their ends; lateral tail-feathers, tipped with a few black spots, the outer pair being pure white; cheek, sides of neck, and middle of upper breast, whitish with brownish streaks; sides of breast, greyish-brown; chin, front of neck, abdomen, and under tail-coverts, white.

Adult female nuptial.—Similar to the male plumage, but the markings are less pronounced.

Adult winter, male and female.—The back and wings are more finely spotted with white, and the neck is much whiter than in the nuptial plumage.

Immature, male and female.—Resembles the adult winter-plumage, but the feathers of the back, the scapulars, and wing-coverts exhibit only a faint gloss, are not so spotted as in the adult, and are margined with light yellowish-bronze.

BEAK. Blackish-brown.

FEET. Dull green.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	9.5 in.
WING	...	...	...	5.5 „
BEAK	...	...	...	1.2 „
TARSO-METATARSUS	...	...	...	1.25 „
EGG	...	...	...	1.55 × 1.1 in.

SOLITARY SANDPIPER. *Totanus solitarius* (Wilson).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. ix, pl. 714; Lilford, 'Coloured Figures,' vol. v, pl. 48.

There are but three British occurrences recorded of this very rare American visitor. One from Scotland, a bird taken on the banks of the Clyde, "some years ago" (R. Gray, 'Ibis,' 1870, p. 292); another from the Scilly Isles, obtained September 21st, 1882; the third was procured

near Marazion, in Cornwall, October, 1884 (T. Cornish, 'Zoologist,' 1882, p. 432, and 1885, p. 113).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Resembles the adult male nuptial plumage of the Green Sandpiper, but the rump and middle upper tail-coverts are blackish-brown; tail and lateral upper tail coverts, white, broadly barred with black; oblique white bars on the axillaries, broader than in the Green Sandpiper.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Resembles the winter plumage of the Green Sandpiper; very few spots on the back and wings; head, brownish; front and sides of neck, light brown, sparsely speckled with dark brown.

Immature, male and female.—Resembles the adult winter plumage, but the feathers of the back and wings are margined with light reddish-brown; front of neck and upper breast, brownish without spots; lower breast and abdomen, white.

BEAK. Greenish-black.

FEET. Greenish-grey.

IRIDES. Brown.

EGGS. Not definitely known.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	8.25 in.
WING	...	...	...	5.2 "
BEAK	...	...	...	1.2 "
TARSO-METATARSUS	...	...	...	1.2 "

YELLOWSHANK. *Totanus flavipes* (J. F. Gmelin).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. ix, pl. 715; Lilford, 'Coloured Figures,' vol. v, pl. 50.

Another American species of great rarity in Britain. It has twice been recorded. One specimen was obtained at Misson, in Nottinghamshire, in the winter of 1854-55 (Yarrell, Hist. Brit. Birds, 3rd Edit., vol. ii., p. 637); it is preserved in the Leeds Museum. The second bird was

obtained near Marazion, in Cornwall, by E. Vingoe, on September 12th, 1871 (Rodd, 'Birds of Cornwall,' p. 93).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head and back of neck, greyish-white, striped with black; back and wings, light brown, with blotches and transverse bars of black on the scapulars and secondaries; tail-feathers, white with several light brown bands, which are broadest on the central pairs; upper tail-coverts, white with dusky-brown bars; chin, breast, and abdomen, white; neck, also white, thickly striped with light brown; axillaries, white, barred with ash-brown.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—General colour of the top of the head, back, scapulars, and wings, light greyish-brown; neck and throat, whitish, the streaks being scarcely visible.

Immature, male and female.—Resembles the adult winter-plumage, but the feathers of the back, scapulars, and wings, are tinged with brownish-white.

BEAK. Black, and slender.

FEET. Bright yellow.

IRIDES. Blackish-brown.

EGGS. Pale buff, blotched with dark and light brown: clutch, four.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	10.75 in.
WING	...	...	...	6.4 "
BEAK	...	...	...	1.4 "
TARSO-METATARSUS	...	...	...	2 "
EGG	...	...	...	1.65 × 1.1 in.

COMMON REDSHANK.¹ *Totanus calidris* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 54; Dresser, 'Birds of Europe,' vol. viii, pls. 567 fig. 1, 568 fig. 1, 569 fig. 2; Lilford, 'Coloured Figures,' vol. v, pl. 49.

The Common Redshank is the most plentiful, widely distributed, and familiar of the true Sandpipers (*Totanus*).

¹ Casual observers often misapply the name 'Redshank' to the Black-headed Gull, which also has red legs.

which frequent the British Isles. From our low-lying coasts, especially in those districts where there is an abundance of slob-land and ooze, this 'wader' is seldom absent, and small numbers of non-breeding birds remain after the majority have gone inland to their nesting-sites. 'Wisps' of immature birds may be noticed along our shores as early as the middle of July;¹ these, which are chiefly home-bred, are joined later on, about the middle of August, by large gatherings of migrants which descend from higher latitudes.

In some districts the numbers diminish at the onset of severe weather, many birds passing southward; in other places, for example, on the Dublin coast, the Redshank is numerous throughout the winter.²

Along the Scottish mainland, this species is abundant, though less so on the Island-Groups. In fact, in the Outer Hebrides, it is mainly known as an autumn-migrant.

This bird delights to probe in soft, estuarine mud, and is usually abundant about the mouths of large city-rivers, the muddy beds of which are laid partially bare at low water. But it may be said that there is hardly a spot on the coast unfrequented by this noisy and restless species. Its incessant and piping cry may be heard over the low, flat sands, far out at the edge of the breakers, about the seaweed-covered rocks of both island³ and mainland, in channels and drains of salt and brackish water, and even up rivers some miles from the coast.

Wary in its habits, it is a difficult matter to approach this bird (except when immature) on the open strand, even within gunshot. Yet it is possible to study its movements, without much difficulty from the cover of a large rock, or the scanty vegetation of the sand-hills. Sociable and very active, 'wisps' and small flocks may be seen constantly flitting to and fro over the sands, some alighting among

¹ During the entire month of July, and even in the first week in August, I have over and over again heard adult Redshanks screeching loudly as though their nesting-haunts were being intruded upon, the birds at the same time flying round my head in a most menacing manner. The immature birds, which were feeding on the ooze, were not at all times close by. The habit is of interest, as the parent-birds were miles away from their breeding-haunts.

² I have shot Redshanks in full winter-plumage as early as September 6th.

³ In August, 1897, I observed quite a large gathering of Redshanks resting on a small rock-island of the Blasket Group, off the coast of Kerry.

Dunlins, Knots, Ringed Plovers, and other small wading-birds, while others prefer the companionship of the more sturdy Curlews, Godwits, and Sea-Pies. But nowhere does the Redshank mass into large flocks, though numbers may be seen scattered widely over the sands and ooze. It is amusing to watch a party of these birds standing along the edge of the tide, jerking their tails and nodding their heads in true sandpiper-fashion, and from some unknown motive. Presently one of them will wade into a channel until its feet and legs are quite covered. In this position—half swimming, half wading—it will boldly plunge its head and slender neck under the water in search of food, until finally, by the force of the current, it is taken off its feet and obliged to swim. This the Redshank can do with ease; indeed, I have seen it cross a deep salt-water creek of considerable width, and have observed wounded birds dive courageously to escape capture. At high water this, like many other shore-birds, rests on rocks, shingle, and tufts of grass, deserting these at ebb-tide for the ooze-flats. Occasionally it retires inland for other than breeding-purposes, and in sheltered and wooded districts it not infrequently perches on trees.

Some sportsmen dislike the sight of this bird on the coast because of its incessant, noisy cry, which comes as a warning to other wildfowl to keep clear of the gunner's range. But to the true lover of birds the plaintive piping of this favourite shore-bird is a welcome and an agreeable sound. The tuneful melody, short and simple, consisting of but a few bars, fully expresses that it is rendered by an emotional and a timid creature. If the piping of the Redshank and the mournful whistle of the Curlew should cease to be heard over the sands and shallows of the ebbing tide, how greatly should we miss those enlivening sounds!

Voice.—The alarm-cry resembles the syllables *thū-whö-whö*, *thū-whö-whö*, the accent being thrown well on the first syllable. I have also heard a single tuneful cry, as though the three syllables were fused into one note. It is frequently uttered when the bird is on the wing. The love-song of the male in spring has a peculiar sound like *leero, leero*. It is uttered during courtship, when the male, with nodding head, runs about in front of his spouse.

Flight.—The Redshank is very swift on the wing, and cuts through the air, often pursuing an irregular and even a zig-zag route. The white of the Secondaries is very noticeable as the bird skims over the dark sands.

Food.—Small crabs, shrimps, sand-hoppers, sea-worms, and shell-fish, are sought for along the coast, while at the breeding-haunts berries, insects, and earth-worms, form the main diet.

Nest.—The Redshank breeds on the ground in marshy situations, the majority of the birds resorting to inland districts far from the coast, while others nest close to the sea-beach where marshes and dykes contain brackish waters. A spot fairly rich in grasses, rushes, and coarse vegetation, tall enough to afford concealment to the sitting-bird, is usually selected. I have generally found the nest in the middle of a tuft of long grass and often on the islands of fresh-water lakes. It is made of dry grass, the same material being used for the lining. Sometimes, however, in a secure and isolated spot, the surrounding herbage is so stunted that the nest is quite open to view. Several pairs of birds may be found breeding about the same locality, yet hardly close enough and in sufficient numbers to form colonies. The eggs, four in number, are of a warm buff or stone-colour, marked with numerous blotches and spots of a rich dark, reddish-brown. Some eggs bear a close resemblance to those of the Lapwing, others are coloured not unlike those of the Common Tern, but the ground-colour of the Redshank's egg is usually lighter and clearer than either, and its pear-shape at once distinguishes it from the latter.

Incubation commences about the middle of April, this species breeding somewhat earlier than most wading-birds.

At the approach of an intruder the birds become noisy and wildly excited, endeavouring to distract attention from their brood by their erratic ascending and descending movements through the air.

The Redshank breeds in several counties in England, also in Wales, while in Scotland and Ireland it is more widely distributed as a nesting-species, and in a few favourite breeding-haunts is even numerous.

Geographical distribution.—Abroad, it breeds over a large area of Northern and Temperate Europe and Asia, also in Northern Africa. The migration-range, in autumn and winter, extends along the European sea-board, southward to Cape Colony, and eastward over the Asiatic Continent to India, China, Japan, and the adjoining Islands.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, hind-neck, back, scapulars, and wing-coverts, chequered with

shades of brown; primaries, dark brown, the shorter inner ones being variegated with white; secondaries, chiefly white, giving the extended wings the appearance of having their hinder portions white; lower back and rump, white; tail and upper tail-coverts, transversely barred with blackish-brown and white; chin, whitish; throat, front of neck, breast, and abdomen, streaked with light brown; flanks and axillaries, barred with brown; under tail-coverts, white, with dark streaks and spots.

Adult female nuptial.—Similar to the male plumage, but the markings are less pronounced.

Adult winter, male and female.—Top of head, hind-neck, back, scapulars, and wings, dull ash-colour; front of neck and breast, whitish with some streaks of ash-brown; throat and abdomen, white; axillaries, pure white.

Immature, male and female.—Top of head, hind-neck, back, scapulars, and wings, greyish-brown, edged and chequered with buff; cheeks, rest of neck, throat, and breast, greyish, with darker streaks; flanks and under tail-coverts, white, slightly streaked with greyish-brown; abdomen, white; tail, marked similarly to that of the adult.

BEAK. Deep orange at the base; point, blackish-brown.

FEET. Orange-red.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	11	in.	Female slightly larger.
WING	...	6.25	„	
BEAK	...	1.8	„	
TARSO-METATARSUS	...	1.9	..	
EGG	...	1.75	×	1.2 in.

SPOTTED REDSHANK. *Totanus fuscus* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 55; Dresser, 'Birds of Europe,' vol. viii, pls. 567 figs. 2, 568 figs. 2, 3, 569 fig. 1; Lilford, 'Coloured Figures,' vol. v, pl. 51.

This beautiful Sandpiper alights on our shores as an occasional visitor during the spring and autumn migration.

During some seasons it is not infrequent, especially in the south-eastern counties of England.

In Scotland it has been procured in Haddingtonshire, Banffshire, Aberdeenshire, Elginshire, in the Solway district, and also in the Orkneys.

The Spotted Redshank is rare in Ireland. About eight examples have been taken, and it has probably been observed some twenty-six¹ times. It has visited the counties of Cork, Dublin, Kildare, Sligo, Mayo, and Down (R. Warren, 'Birds of Ireland,' pp. 300-301). The first recorded specimen was obtained by Thompson, on August 22nd, 1823, at Holywood, Belfast Bay ('Natural History of Ireland,' vol. ii., p. 200). Several have been recorded of recent years on the shores of Dublin Bay by the late Mr. E. Williams, as follows:—September, 1888, two seen; September 24th, 1891, one obtained; October 3rd, 1892, one seen; September 7th, 1894, one seen. The last-mentioned bird I had the pleasure of observing when in the company of the late Mr. E. Williams; it flew past us at no great distance from the ground, uttering a peculiar note, quite unlike that of the common species. But the most distinguishing feature was the absence of white on the hinder portions of the wings, so well seen on the Common Redshank when in flight.

In their habits, this and the preceding species are not unlike, especially with regard to the nature of their feeding-grounds, and the manner in which they freely associate with other shore-birds. The Spotted Redshank is, on the whole, more partial to fresh or brackish waters, though it is noteworthy that of all the records made by Mr. Warren only two are from inland localities. This bird, with its remarkably long legs and feet (much longer than those of the Common Redshank), is able to wade to a considerable depth, and has been seen standing, like the Avocet, up to its middle in a pond of water, pecking at the insects as they rose from the surface. (Degland, 'Ornithologie Européenne').

Flight.—On the wing, this bird is strong and swift, and, like a flushed Snipe, will ascend to a great height when startled, soon disappearing out of sight.

Voice.—The late Mr. E. Williams describes the alarm-

¹ Of these, some sixteen occurrences have been recorded by Mr. R. Warren, from cos. Mayo and Sligo.

note as "a peculiar twitter, quite unlike the bold whistle of the common species" ('Irish Naturalist,' 1894, p. 224). The note may be syllabled *tū-whēē-tū*, *tū-whēē-tū*, often repeated. A two-syllabled call-note is also uttered.

Food.—This consists of insects (including beetles, which are largely consumed), shell-fish, and worms.

Nest.—According to the observations of Wolley, the Spotted Redshank, when nesting, resorts to rather dry situations in well-timbered districts, sometimes hilly and at a considerable distance from water. The nest is a shallow depression in dark, rough soil, "often where the forest has been burned" (Saunders). The eggs, four in number, vary from pale brown to pale green in ground-colour, blotched and spotted with brown and black. Incubation begins about the end of May.

Geographical distribution.—The Spotted Redshank breeds in Arctic and Northern Europe and Asia, journeying in autumn and winter over Europe to South Africa, while its eastern migration extends to Southern Asia and Japan.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—General plumage, black, spotted with white; lower back and upper tail-coverts, white, transversely barred with black; tail-feathers, barred white and brownish; primaries, blackish.

Adult female nuptial.—Resembles the male nuptial plumage, sometimes the breast and abdomen are brownish-black, and more thickly spotted with white than in the male; the chin is often white (Saunders).

Adult winter, male and female.—Top of head, hind-neck, back, scapulars, and wings, ash-grey, with white mottlings; tail-feathers, dusky, the central ones without black and white barring (*cf.* tail-feathers of Common Redshank); secondaries, thickly barred with white and dusky greyish-brown; front and sides of neck, greyish; breast and abdomen, greyish-white; axillaries, white.

Immature, male and female.—Back, scapulars, and wings, brownish-grey, spotted with white; throat, breast, and abdomen, washed with ash-grey on a white ground; the immature plumage bears a general resemblance to the winter adult plumage.

BEAK. Blackish, the base of the lower segment being reddish.

FEET. Deep red; much longer than those of the Common Redshank.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	13	in.
WING	...	...	...	6.25	"
BEAK	...	...	...	2.25	"
TARSO-METATARSUS	...	...	...	2.2	"
EGG	...	...	...	1.85	× 1.25 in.

GREENSHANK. *Totanus canescens* (J. F. Gmelin).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 53; Dresser, 'Birds of Europe,' vol. viii, pl. 570; Lilford, 'Coloured Figures,' vol. v, pl. 52.

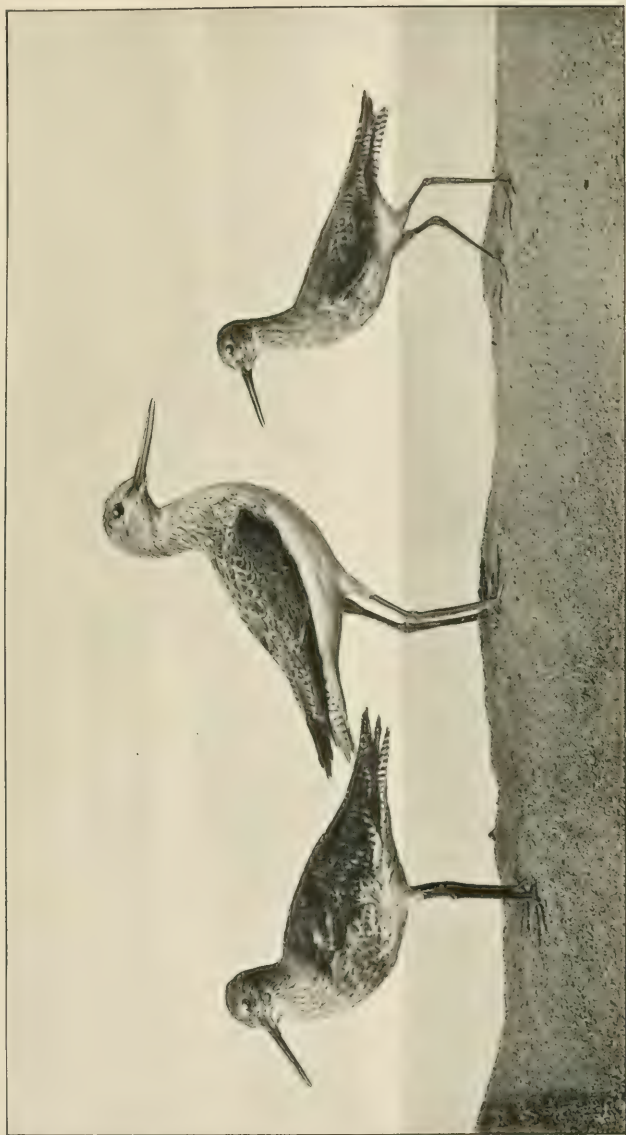
The Greenshank is the largest of our British Sandpipers (*Totanus*), being hardly inferior in size to the Bar-tailed Godwit. It is tolerably common on the coast during migration in autumn, and again on the return journey in spring.

In winter, large numbers pass southward, though this species may be seen on our shores at almost all seasons of the year. The observations of Mr. Warren¹ show that this wading-bird is one of the earliest to return from its breeding-haunts, appearing occasionally on the Mayo coast at the end of June, or early in July.

From the Redshank it may readily be distinguished by its superior size, longer legs and feet of a totally different colour, and by the greater display of white² on the throat, breast, and abdomen (Plate XXXVI.). Nor is the Green-

¹ A flock of fourteen was observed on the Mayo coast on June 19th, 1878, by Mr. Warren, and I have frequently seen small gatherings during June and July, on the slob-lands of the Dublin coast.

² A recently shot adult Greenshank in full winter-plumage with its unsullied white breast and abdomen, and richly chequered grey back and wings, is a strikingly beautiful creature, as it lies with extended wings and tail on the dark slimy ooze.



H. Brooke, Photo.

REDSHANKS AND GREENSHANK.

From specimens collected and mounted by the author. The Greenshank (centre bird) mounted by the late Mr. E. Williams.

shank so incessant in its cry, though its piping alarm-note may be heard if it detects an enemy on the open strand, even at a distance of two or three hundred yards. Young birds are naturally less wary, but even they are very timid. I have seen them take flight at the sound of a train, an electric car, or other vehicle, passing along the coast, while many wading-birds, even the restless Redshanks, continued to feed unconcernedly on the ooze.

It is, in fact, an exceedingly timid and wary bird, most difficult of approach, though outwardly it appears less excitable than many other Sandpipers. The peculiar habit, so constant in the group of *Totanus*, of nodding the head and flirting the tail is not marked to such an extent as in many other species. The numbers which consort together seldom exceed half-a-dozen. When these birds first arrive in early autumn, old and young may be seen together, forming family parties, though when feeding, they usually scatter widely on the ooze. At the slightest provocation the parent-birds take wing, warning the young by their loud piping cries. The latter instantly follow suit, and joining their parents, flit across the sands in search of another feeding-ground.

This species is rather fond of gullies and drains, the beds of which are composed of slimy, sinking ooze, often black and foul-smelling. Such places are difficult and dangerous to traverse. I have a vivid recollection of once sinking up to my middle in an ooze-flat when endeavouring to pursue a wounded Greenshank, which, despite all my efforts to secure it, floated down the channel and was carried to sea by the ebbing tide.

But like the Redshank the Greenshank does not confine itself to such localities. It may be met with wading along the edge of a clear fresh-water rivulet near the sea; rocky coasts are less frequently resorted to, though I have disturbed a pair of Greenshanks from a ledge on the face of a high precipitous cliff on the Donegal coast. Groups of these birds often cross over from the mainland to adjacent islands, especially at high water when the sands and ooze-flats are covered.

This bird can both swim and dive. It has been known, during flight, to plunge repeatedly under the surface of the water to escape the talons of the Falcon (Warren). Like other Sandpipers it occasionally perches on trees.

Flight.—Though very rapid and buoyant on the wing,

especially when suddenly frightened, yet from ambush I have seen Greenshanks skimming over the surface of the water with slow and steady strokes of the wing.

Voice.—If the nesting-grounds are too closely approached this bird utters a harsh scolding cry, syllabled *chee-weet*, *chee-weet*. The alarm-note, heard over the slob-lands by night as well as day, consists of a succession of piping cries, rather monotone in character, and resembling the syllables *chù-chù-chù-chù-chù-chù*, each note being strongly and evenly accented.

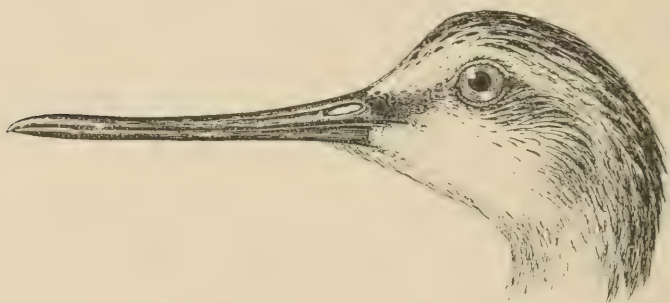


FIG. 47.—HEAD OF GREENSHANK. $\frac{11}{12}$ Nat. size.

Food.—The mixed diet consists of crabs, shrimps, sand-eels, and other little fishes¹ found in shallow waters. Shell-fish, worms, and insects, are also eaten, the last being sometimes obtained at a little distance from the beach.

Nest.—The site selected for breeding-purposes is usually not far from the edge of a fresh-water lake, a pond, or a river, and the nest is generally built amid coarse grasses and other vegetation. The eggs, four in number, are rich buff-colour, blotched and spotted with brown and purple-grey, and are among the most beautiful eggs belonging to the Order *Limicolæ*.

Heretofore the Greenshank has not been discovered breeding in England, Wales, or Ireland, but in Scotland it is known to nest in the following counties:—Perthshire, Inverness-shire, Ross, Argyll, Sutherland, and Caithness. It also breeds in both the Outer and Inner Hebrides, but not

¹ I have found the remains of small fishes in several gizzards of this species and of the Redshank.

in the Shetlands or Orkneys (Buckley and Harvie-Brown, 'Vertebrate Fauna of Sutherland and Caithness').

Geographical distribution.—Abroad, it breeds over a vast area of Northern Europe and Asia, migrating in winter over these Continents, and reaching as far as Australia. According to Mr. Saunders, considerable numbers do not travel further in winter than the Mediterranean basin and the Canaries.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head and hind-neck, greyish-white streaked with dark brown; back, scapulars, wing-coverts, and secondaries, blackish, edged with grey; primaries, blackish-brown; lower back and upper tail-coverts, white; tail, white, splashed and barred with brown; throat, front and sides of neck, cheeks, breast, and flanks, streaked and spotted with pale brown on a white ground; abdomen and under tail-coverts, white.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—The top of the head, back, and sides of the neck have lighter streaks, and the variegated markings on the back, scapulars, and wings, also exhibit lighter shades of grey than in the nuptial plumage; in fact the upper plumage of the Greenshank in winter may be shortly described as a 'chequered tweed-grey'; chin, throat, front of neck, breast, (save a small portion of the sides), abdomen, under tail-coverts, and flanks, pure white; a white stripe extends from the base of the beak to the front of the eye; central tail-feathers, greyish-white, barred with light brown; lateral tail-feathers, chiefly white, spotted on their outer webs with greyish-brown.

Immature, male and female.—Somewhat resembles the adult winter-plumage, but the feathers of the back, scapulars, and wings, are edged with dark buff, and the neck, breast, and flanks, are finely streaked with dark greyish-brown.

BEAK. Blackish; very slightly recurved.

FEET. Dull greenish; long and slender.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	12	in.
WING	...	...	7.25	„
BEAK	...	...	2.25	„
TARSO-METATARSUS	...	...	2.25	„
EGG	...	...	1.9 × 1.3	in.

RED-BREASTED SNIPE. *Macrorhamphus griseus*
(J. F. Gmelin).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 76; Dresser, 'Birds of Europe,' vol. viii, pl. 571; Lilford, 'Coloured Figures,' vol. v, pl. 29.

The first British specimen of this rare American bird was taken about October, 1801, in Devon. It was described and figured by Montagu as the 'Brown Snipe' (Ornith. Dict.). This specimen is preserved in the British Museum. The above county is credited with yielding three more examples, while the bird has also been recorded from:—

England:—Middlesex, Norfolk, Lincolnshire, Lancashire, Cumberland, and the Scilly Isles.

Scotland:—There appear to be but three records, namely, one obtained in Fifeshire, September, 1867 (Gray, 'Birds of West of Scotland'); this bird is preserved in the Edinburgh Museum. Another obtained in Lanarkshire (Gray, 'Ibis,' 1870). The third was procured in Argyll, September 2nd, 1891 (Malcolm, 'Zoologist,' 1891).

Ireland:—Until 1893, this species was unknown in Ireland. During the autumn of that year two examples were obtained, the data being as follows:—A female bird, in immature plumage, received in Dublin on September 29th, by the late Mr. E. Williams. This specimen was sent up with a consignment of Snipe from Queen's County (E. Williams, 'Irish Naturalist,' 1893, p. 302); it is now preserved in the Science and Art Museum, Dublin.

An adult female, received in Birmingham, on October 11th, by Mr. F. Coburn. This specimen was also found among a number of Snipe, sent from the co. Tipperary. It was sent to Professor Newton, who is of the opinion that it belonged to the western variety (*Macrorhamphus griseus*, var. *scolopaceus*) (G. E. H. Barrett-Hamilton, 'Irish Naturalist,' 1893, pp. 323-4).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, blackish, mottled with brown; back, scapulars, and wings, blackish, with yellowish edgings; shaft of first primary, white; tail and its upper coverts, white and rufous, barred with black; abdomen, reddish-brown; throat and breast, reddish-brown,

sparsely spotted with black: axillaries, white, barred with black.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—General colour ash-grey, with whitish under-parts.

Immature, male and female.¹—Resembles the adult winter-plumage, but the shade is greyer; the feathers of the back, scapulars, and wings, being only thinly edged with rufous.

BEAK. Dark olive.

FEET. Pale olive.

IRIDES. Dark reddish-brown.

EGGS. Greenish-grey or brownish-olive, blotched with dark amber: clutch, four.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	10	in.	Female smaller.
WING	...	...	5.5	"	
BEAK	...	...	2.2	"	
TARSO-METATARSUS	...	...	1.5	"	
EGG	...	...	1.75	×	1.22 in.

BAR-TAILED GODWIT. *Limosa lapponica* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 51; Dresser, 'Birds of Europe,' vol. viii, pls. 573 figs. 1, 2, 574 fig. 2; Lilford, 'Coloured Figures,' vol. v, pl. 56.

Of the two species of Godwits which frequent our shores, the Bar-tailed is by far the most numerous. It occurs in considerable numbers every year, being abundant when migrating in spring and autumn. A decrease in numbers during the winter is probably most marked on the southern shores of England; but here, large numbers in nuptial plumage reappear in spring. Along the western coasts of Great Britain it occurs mainly as an autumn and early winter-visitor.

¹ I noticed that the immature female specimen from Queen's Co., presented to the Museum of Science and Art, Dublin, has the head and neck of a mouse-brown colour; the back showing distinct rufous edgings.

It is widely distributed over the shores of Scotland, though rare in the Orkneys.

The Bar-tailed Godwit is common on many parts of the Irish coasts. Immature birds, at first quite tame, generally appear about the middle of August. They can often be approached so closely that the rich buff colour of their breasts is discernible. I have observed flocks of several hundreds in midwinter on the Dublin coast, and these, in spring, are reinforced by migrants journeying from southern latitudes. Many of the latter remain with us until the beginning of June.¹ Like the Knot, this bird very seldom appears on the Irish coast in nuptial plumage. It would seem that a large proportion are immature, and many such remain throughout the breeding-season.

This species delights to wander over ooze-flats and stretches of soft sand, into which it can probe its long beak in search of food: it often follows the bed of a salt-water drain or creek.

I have seen large flocks resting on the bare sands at ebb-tide, some of the birds apparently asleep, with their beaks buried in the feathers of the shoulders, and supporting themselves each on one leg.² But at high water they appear to take most rest, when, scattered into pairs and small parties, they stand motionless on rocks, shingle, or marshy grass-tufts.

This bird seldom attempts to swim except when wounded, but it will frequently stand still for a considerable time while its feet and legs are being washed by the ripples of the inflowing tide.

¹ On June 7th, 1899, I descried an unusually large flock consisting of several hundreds of Bar-tailed Godwits, on the Dublin coast; I scanned them carefully with my field-glass, but failed to recognise any nuptial-plumaged birds among them.

² I made the following observations on a fine, adult Bar-tailed Godwit which was presented by Mr. Warren to the Royal Zoological Society of Ireland. The bird had a habit of standing for a considerable time on one leg, with its feathers puffed out. When walking or standing, the beak was generally carried horizontally. Though normally of a calm and contented nature, yet fits of excitement sometimes manifested themselves, especially in early autumn. At such times the captive would fly round and round its cage, battering itself against the bars, as though trying to escape. Indeed, it seemed almost suggestive that the bird was possessed of a strong migratory desire. When eating, it would bury its long beak in its food, which consisted of bread softened in milk, chopped meat, and vegetables. It repeatedly sounded the syllables *cak-cak-cak*, when resting and walking. Its expression of eye was soft, and with the other feathered inmates it was most friendly.



HEAD OF BARTAILED GODWIT.

Half natural size.

From a specimen collected and mounted by the author.

Flight.—The Bar-tailed Godwit rises from the slob with a comparatively slow and measured flight, which contrasts with that of many other *Limicoline* birds, but when well on the wing it travels with remarkable speed. I have seen a flock perform magnificent aerial gyrations, and the velocity with which the birds can shoot almost vertically downwards from an immense height to their feeding-grounds is astonishing.

Voice.—Mr. Harting compares the note to the syllables *lou-ey, lou-ey*. But the curious barking sound heard from flocks when on the wing in autumn and winter, seems to resemble the syllables *āk-āk, āk-āk*.

Food.—Small crabs, shrimps, sand-hoppers, marine insects, and shell-fish, constitute the staple diet. The flesh of the immature bird is considered edible, but, like that of many other shore-birds, it has a tendency towards a fishy flavour.

Nest.—This species breeds in marshy situations, scraping a hollow in the ground for a nest. The eggs, four in number, are pale olive-green, blotched and streaked with brown.

Geographical distribution.—The breeding-range appears to extend across Arctic Europe and Asia, from Lapland eastward to the River Yenesei. On migration, in autumn and winter, the bird occurs in great numbers over the sea-board of the European Continent, and as far south as the coast-lands of Equatorial Africa. Eastward it migrates over the Asiatic Continent, as far south as Northern India. Numbers of birds, apparently immature, remain throughout the summer months in many districts of the British Isles, but there is no evidence that this species has nested with us.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head, back of neck, and sides of breast, reddish-brown, streaked with black; back, scapulars, and wings, marked irregularly with brown and black; some of the wing-coverts are margined with white; primaries, brownish-black; rump and upper tail-coverts, white, streaked with brown; tail, broadly barred with light buff and dark brown; chin, throat, front of neck, breast, abdomen, and under tail-coverts, rich chestnut-red.

Adult female nuptial.—Resembles the male nuptial plumage, but the chestnut colour is less pronounced.

Adult winter, male and female.—Breast and abdomen, greyish-white; front of neck and upper breast, thinly streaked with brown; top of head, hind-neck, back, scapulars, and wings, ashy-grey, streaked with greyish-brown; tail, ash-brown, *without any barring*; upper tail-coverts, *barred* with brown and white.

Immature, male and female.—Top of head, back, scapulars, and wings, variegated with brown and buff; cheeks, neck, and breast, dull greyish-buff, indistinctly streaked with brown; abdomen, yellowish-buff without streaks; under tail-coverts, whitish; tail, broadly barred with buffish-white and dark-brown; rump and upper tail-coverts, white; over the eye is an ill-defined buffish-white stripe; the immature plumage bears a general resemblance to the adult winter-plumage, but there is more fulvous shading in the former.

BEAK. Brownish; slightly recurved near the tip.

FEET. Brownish.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	15.5 in.
WING	...	...	...	8 "
BEAK	...	...	...	3.5 "
TARSO-METATARSUS	...	...	...	2.5 "
EGG	...	...	...	2.1 × 1.45 in.

Allied Species and Representative Forms.—The Eastern Siberian form which ranges to Alaska, and migrates over Asia to China and Japan, reaching Australia and New Zealand, is larger, with duller chestnut-red markings, and browner about the rump (Saunders).

BLACK-TAILED GODWIT. *Limosa belyica* (J. F. Gmelin).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 50; Dresser, 'Birds of Europe,' vol. viii, pl. 573 fig. 3, 574 fig. 1; Lilford, 'Coloured Figures,' vol. v, pl. 55.

This fine bird is a somewhat scarce visitor to our coasts. Formerly it was more abundant and bred in some of the

south-eastern counties of England. Nowadays it appears but as a passing migrant in spring and autumn, a few stragglers remaining until the winter.¹ It occurs most often during the southern migration in August and September, and again in April and May, on its passage northward to breed. North of the coast of Yorkshire, its visits become scanty and irregular.

In Scotland it is seldom observed. Recently, September 12th, 1905, a specimen was obtained at the Ythan estuary, Aberdeenshire (G. Sim, 'Zoologist,' 1905, p. 466). Mr. Saunders mentions one obtained at Loch Spynie in the autumn of 1878, and another on Westray, Orkneys, on September 27th, 1894; Tiree, in the Inner Hebrides, is visited sometimes in spring. Mr. Harvie-Brown mentions one or perhaps two recently obtained in the Outer Hebrides ('Avifauna Of The Outer Hebrides,' 1888-1902. Ann. Scot. Nat. Hist., 1902-1903).

Ireland is probably visited by small numbers of this species annually in autumn. At other seasons of the year records are exceptional. Mr. Ussher mentions one taken in June on the Moy estuary, co. Mayo, and a pair in July in co. Longford. Mr. Warren records a few specimens seen or obtained in nuptial plumage on the Mayo coast ('Birds of Ireland,' p. 307, also 'Irish Naturalist,' 1903, p. 112). In the 'Zoologist' for 1902, p. 316, Mr. F. Coburn states that he received a female in full winter-plumage from Limerick.

This is the larger and more elegantly shaped of the two species of Godwits. In its general habits it resembles its congener.

Flight.—On the wing it displays great power and velocity, indulging in aërial evolutions no less wonderful than those performed by the last species. The broad white band on the tail is very evident as the bird flies low over the dark sands.

Voice.—The alarm-cry, heard in autumn on the coast, is of a somewhat musical and whistling character; it may be syllabled *chū-tēe-chūo*, *chū-tēe-chūo*.

Food.—This consists mainly of marine worms, insects, and small shell-fish.

¹ In the 'Zoologist,' 1905, p. 70, the Rev. Julian Tuck mentions that he procured a female specimen "in almost complete winter plumage," from a game-dealer's shop in Bury; the bird was obtained from Lynn.

Nest.—The nest is generally situated in marshes, and near water; it consists of a rather shallow hollow, scantily lined with dry grasses and other vegetation. The eggs, four in number, are pale brownish-green, spotted with brown. Before the fens and marshes of some of the eastern counties of England were reclaimed, the Black-tailed Godwit was known to breed with us. It formerly nested in Norfolk, Lincoln, Cambridgeshire, Huntingdon, and South Yorkshire. In Norfolk, according to Stevenson, it bred annually until about 1830, though for many years afterwards, odd pairs probably nested in that county. "The last nest heard of was one containing three eggs, taken at Reedham, Norfolk, in 1857. These eggs were sold at Stevens's, March 23, 1858, and two of them are in the collection of Professor Newton" (Harting). It bred in the other counties named until the beginning of the last century.

Large numbers were formerly netted for table-use (this species being considered a very great delicacy), which thinned out the numbers of nesting-birds very considerably.

Geographical distribution.—The Black-tailed Godwit breeds in several countries of Temperate and Northern Europe, notably Belgium, Denmark, Holland, North Germany, Scandinavia, and Russia; also in Iceland. It is found breeding in the western section of Temperate and Northern Asia, *e.g.*, Siberia. On migration in autumn and winter, it visits the sea-board of Europe, Northern Africa, and Southern Asia, as far as India and Ceylon. Many birds spend the winter about the Mediterranean basin.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, and hind-neck, reddish brown, with dark brown markings; back and scapulars, brownish, mottled with black; wings, chiefly brownish, with a noticeable bar of white; primaries, dusky; rump and upper tail-coverts, white; tail-feathers, blackish, with broad white bases and thinly margined with white; cheeks, throat, neck, and breast, reddish-brown, the lower part of the breast being barred with black; abdomen, greyish-white, with brown bars; chin and under tail-coverts, white.

Adult female nuptial.—Similar to the male plumage, but the reddish-brown shadings are duller.

Adult winter, male and female.—Top of head, hind-neck, back, scapulars, and wings, light ash-brown; throat, front of neck, breast, and upper part of abdomen, light greyish; lower part of abdomen and under tail-coverts, white.

Immature, male and female.—Somewhat resembles the adult winter-plumage, but exhibits a warm reddish-buff shading about the neck and upper breast, and the back and wings are darker brown.

BEAK. Brownish; slightly upcurved towards the tip.

FEET. Olivaceous-green.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	16	in.	Female a trifle larger.
WING	...	8	„	
BEAK	...	3.7	„	
TARSO-METATARSUS	...	3.5	„	
EGG	...	2.2	×	1.5 in.

Allied Species and Representative Forms.—The Eastern bird is larger than our own, but is not a distinct species, while *L. hudsonica*, a smaller species, with smoky-brown axillaries (which in our bird are white), inhabits North America.

CURLEW. *Numenius arquata* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 48; Dresser, 'Birds of Europe,' vol. viii, pl. 578; Lilford, 'Coloured Figures,' vol. v, pl. 57.

The Curlew is one of the most plentiful of shore-birds. Vast numbers, mainly migrants from higher latitudes, congregate on our large estuarine mud-flats in autumn (September to November), many remaining until the following spring. Of these, a large proportion are immature, and as they do not breed until the completion of their second year.

they remain on the coast throughout the summer. An influx of birds, migrating northward, takes place in spring (March and April), when the loud cries of thousands may be heard in the darkness of the night at a considerable altitude.¹ When these travellers sojourn on our coasts for a short time, they mass into great throngs which are maintained as they continue their journey northward. But in addition, many are resident, or at least breed in the British Isles. These usually retire inland to their nesting-sites, some weeks before the spring-migrants arrive, and return to the coast about the middle of July.

Partial though this species may be to low-lying and sandy coasts, it also searches among the *fucus*-covered rocks and shingle for food. In fact, few localities come amiss to its adaptable habits, provided that human traffic is not too great.

The Curlew is eagerly sought for by the gunner, being a bird of considerable size, and fit for table-use.² It is exceptionally wary and restless, and can seldom be approached within gunshot-range on open ground. I have watched numbers (from behind a large rock) alight at their feeding-grounds, often only forty yards from me. I have noted how hundreds, congregated on the remote Atlantic-facing shores of Western Kerry, would quit the beach as the tide advanced, and fly over the cliffs, several hundred feet high, to the ploughed fields in search of earth-worms,³ a favourite meal.

On one occasion, I observed a Curlew alight on a small ledge on the face of a cliff in the co. Galway, where it crouched with a flock of clamorous Jackdaws and Kittiwakes, to escape the notice of a Peregrine that was lurking overhead.

Curlews frequently disperse themselves over the shores and islands of inland lakes and rivers, occasionally perching on tree-stumps, and even among the higher branches. Though active night-feeders, it is remarkable how feebly

¹ On these great migration-nights, the cries of several familiar species, *e.g.*, Redshanks, Pee-wits, Ringed Plovers, and others, may be heard mingled with the more powerful Curlew's whistle.

² The flesh of old Curlews which have inhabited the sea-beach for several successive seasons, is liable to be fishy and unpalatable.

³ I have shot many Curlews in ploughed fields with their mouths and gullets packed with wriggling earth-worms.



CURLEW.

they can see in the dark. I have a vivid recollection of an experience with these birds along the shores of a small freshwater lake, in the co. Clare. My friend, the Rev. S. W. King, accompanied me, and as we seated ourselves on a boulder to rest after a hard day's shooting, hundreds of Curlews alighted close to our feet. The dusk of evening had already set in, and as the birds continued to alight, one after the other, there was a constant 'swish' of wings which went on for fully half an hour after we arrived. Greater and greater grew the flock, until presently we listened with rapt attention to the chattering of scores of voices, and the scraping of many beaks, amid the loose stones which surrounded us. After a while the moon—more than half full—peeped from behind a great white rolling cloud, and, casting her beams earthward, revealed to us that we were surrounded by thousands of Curlews all unconscious of our presence. After a few minutes more had elapsed we singled out two birds somewhat apart from the others, and firing simultaneously, shot them. At the report, a gigantic flock arose with almost deafening cries, but strange to say, the birds did not appear to see us or to know from whence the shot came, for, to our surprise, they wheeled round our heads and alighted again in the same spot. Here we left them feeding busily as before.

In frosty weather, Curlews often scatter themselves over the country, frequenting fallowed fields, ditches, and wet meadows. If the weather be exceptionally severe the weakly ones perish from hunger, the ground becoming too hard for their long and slender beaks to penetrate. I have been informed that Curlews have been captured when endeavouring to extricate their beaks from frost-bound and stony soil. That such ill-fate may overtake these birds is not altogether improbable as the beak is very long and distinctly decurved in shape, and in all likelihood it cannot be withdrawn from the ground as easily as the straight beak of the Woodcock or Snipe.

The Curlew has been observed at lightships, and on lonely rock-islands, some distance from the mainland, for at times it will wander many miles out to sea. I have seen flat-topped islands, elevated sand-banks, and rocks, crowded with these birds waiting patiently for the fall of the tide. In some districts they will fly several miles inland, returning precisely as the tide begins to ebb. Their watchfulness when feeding, especially on the ooze-flats

devoid of cover, is well known to every observer of shore-birds. Each member of the flock grows uneasy and suspicious should it see an observer watching it even from a distance. Presently a shrill whistle is given forth from a wary veteran, then from a few more birds, soon a dozen or more voices are heard as the outlying members wing their way towards the densest part of the flock. The alarm rapidly spreads among the ranks, until, with one accord, an immense mass of birds is seen taking wing, accompanied by a babel of whistles of Curlews and other shore-birds. For the warning has by this time reached far and wide, so that Redshanks, Plovers, and other species, growing anxious, also relinquish their feeding-grounds. The Curlew is an unduly timid bird, and will leave the shore at the sight of a man even though far beyond gunshot-range. Most wild-fowl rather shun the society of the Curlew when they can, as its constant note of alarm, sounded unnecessarily

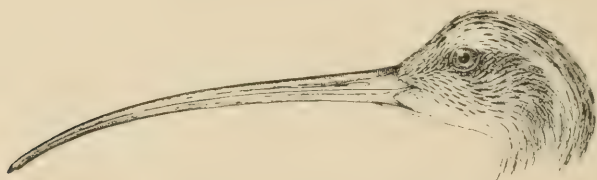


FIG. 48.—HEAD OF CURLEW. $\frac{1}{3}$ Nat. size.

often, becomes a source of worry and uneasiness. But in foggy weather Curlew can be approached closer on the open strand, and it is extraordinary how much magnified they appear as they stand along the edge of the tranquil tide. In thick weather I have been almost startled as one or two of these great birds, looming out of the fog, uttered a piercing screech immediately over my head, at the same time swerving sharply in its flight the instant that it saw me.

Flight.—The flight, though much less cleaving and twisting than that of the smaller shore-birds, is nevertheless rapid and sustained. The steady up-and-down wing-strokes remind one of the hurried flight of a Gull. When travelling long distances the birds of a flock may be seen to arrange themselves in a V-shape, or less often in a rather

irregular line; just before alighting they usually cluster close together.

Voice.—The whistle of a startled Curlew, so piercing when uttered close by, is rendered clear and melodious when heard in the distance. It appeals at once to our love of wild natural scenes; with it we associate the drear and lonely slob-lands, where the hardy feathered denizens brave the terrors of wind and wave. The mournful cry of the Curlew brings back to our memory the long cold nights of winter, when we seek refuge in our cosy homes, artificially warmed and lighted, while the Curlew and its companions are risking the perils of a vast migratory flight over land and sea.

No shore-bird possesses a voice so pathetic, and at the same time so markedly characteristic. The two syllables sound as *cōūr-lēē* or *cōūr-lū*, from which this species has aptly derived its name.¹ But in addition the Curlew produces another note, rather harsh and croaking, and yet not altogether unpleasant. It is generally heard when the flocks are feeding or taking short flights, and seems to denote satisfaction rather than alarm.

Food.—On the beach, sand-worms, crabs, shrimps, and small shell-fish, are largely eaten; worms, insects, and berries, form the diet at the breeding-grounds. The late Mr. E. Williams has shown me dissections of the mouth and gullet stained with blackberry juice, and the late Mr. Glennon, of Dublin, found the stomach of a Curlew filled with blackberries, the juice of which stained the intestine (Watters, 'Birds of Ireland,' p. 144). Sir R. Payne-Gallwey has detected cockles swallowed whole, as well as a small heath-snail (*Helix ericetorum*). I have found fine grass-blades and roots in the gizzard of immature birds shot in September.

Nest.—During March and early April, pairs of Curlews may be met with at their nesting-quarters on extensive bogs and elevated moor-lands in our Isles. For some weeks later in the spring, flocks of considerable size, pushing further north to breed, may be seen passing along our sea-board. The nest, which is nothing more than a slight hollow scraped in the ground, is frequently situated on the grass-covered portions of bog-lands or on the hill-

¹ There is a peculiar turn in the Curlew's whistle, which very few persons can properly imitate.

side, where it may be found amid the shelter of a heather-tuft. I have discovered it on the bare ground on a mountain in co. Mayo. In some instances the nest is sparsely lined with small bits of sticks and withered grass. On bog-lands in Ireland, as pointed out by Mr. Ussher, many pairs breed in close proximity, though not assembling in colonies. The eggs, four in number, are olive-green, thickly spotted and blotched with brown. Incubation begins towards the end of April.

When the breeding-haunts are intruded upon, especially



FIG. 49.—LEFT FOOT OF CURLEW. $\frac{1}{2}$ Nat. size.

when the young are running about, the parent-birds are bold to a degree, and will brush past the head of an intruder, at the same time uttering shrill, menacing cries.

The Curlew breeds in many counties in England, most numerous in the north, also in some of the midlands, and more sparingly in the south-western section. In the

south-east of England it occurs chiefly on migration. In Scotland and Ireland it nests freely on the great bogs and mountain-ranges.

Geographical distribution.—Abroad, this species breeds over the greater part of Northern Europe (omitting Iceland and the Faroes, where its near ally the Whimbrel breeds numerously), also in Germany, Denmark, Holland, Poland, and Northern France. Eastward, with slight racial differences, it is found nesting in the western section of Northern and Temperate Asia.

During the southern migration in autumn and winter, the Curlew is common over the European Continent, reaching South Africa and the Islands off the west coast. Eastward it visits India in winter.

DESCRIPTIVE CHARACTERS.

PLUMAGE.¹ *Adult male nuptial.*—Top of head, nape and sides of neck, back, scapulars, wings, and breast, barred and variegated with dusky-brown and light yellowish-brown; lower back, white, sparsely streaked with black; upper tail-coverts, also white, marked with dark streaks; tail, transversely barred with dark brown and yellowish-white; primaries, blackish-brown, with light shafts, and whitish markings on the inner webs; chin and throat, whitish; cheeks and front of neck, pale greyish-brown with darker streaks; abdomen, white; under tail-coverts, white, thinly streaked with dark brown; flanks, variegated like the breast; over the eye is an ill-defined greyish stripe.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Resembles the nuptial plumage, but the throat, neck, breast, and abdomen, are much whiter, and the striping and spotting are less pronounced.

Immature, male and female.—Like the Whimbrel, the plumage of the immature bird is more tawny in shade and more chequered and variegated in appearance than that of the adult, which it otherwise resembles. The tail-feathers are beautifully and evenly barred with blackish-brown and dull white.

¹ Several partial and entire albinos are on record.

BEAK. Brownish, darker towards the point; slender and decurved.

FEET. Dark greyish-green.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	23 in.	Female larger.
WING	...	...	12 "	
BEAK	...	...	5.5 "	
(Extremes, from 4 in. to 7 in.).				
TARSO-METATARSUS	...	...	4 in.	
EGG	...	...	2.7 × 1.9 in.	

Allied Species and Representative Forms.—The Western Asiatic race mentioned above is not a true species, but shows more white on the lower back and axillaries than the European bird.

N. cyanopus, with the lower back and upper tail-coverts broadly barred, is the true Eastern species; it visits Australia in winter.

N. longirostris, with the axillaries reddish, is the American representative; it is larger than our Curlew.

N. tenuirostris, a smaller species, chiefly inhabits Southern Europe.

WHIMBREL. *Numenius phaeopus* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. iv, pl. 49; Dresser, 'Birds of Europe,' vol. viii, pl. 576; Lilford, 'Coloured Figures,' vol. v, pl. 58.

The regularity with which this species appears along our shores early in the month of May has gained for it the popular name of 'May-bird.' The Whimbrel, like most other 'waders,' is a bird of double passage. It is most abundant in our Isles when migrating northward in spring, distributing itself widely along low-lying as well as rocky parts of the coasts: it also occurs in considerable numbers on remote islands and on inland bogs. In several localities immature birds remain on our coasts throughout the

summer;¹ towards the end of July these are joined by migrants journeying from more northern latitudes. During August, the birds continue to increase in numbers, and by September they are plentiful on many parts of the British coast. The autumnal passage is of brief duration, indeed in October the numbers have considerably diminished. A month later the great majority have travelled southward, and between December and May this species rarely occurs on the British coast.

In its general habits it rather resembles the Curlew. It is, however, less suspicious of danger, and may be seen feeding leisurely on the strand after flocks of Curlews, sounding the signal of alarm, have taken flight. Hence the popular notion that this more innocent species is the young of the Curlew.

In spring, Whimbrels usually keep to themselves when feeding, and are then fairly tame. Soon after their arrival in May, large flocks can, as a rule, be closely approached on the open strand. Their dull brownish-grey plumage harmonises so closely with the dark ooze and broken rocks that many of them may be overlooked.

In autumn they are usually gregarious, consorting on the shores with Redshanks, Godwits, Curlews, and many of the smaller wading-birds.²

I have observed this species flying high in the air over grouse-moors and inland marshes, apparently migrating. In accordance with this observation, Mr. Ussher has noted that the Whimbrel migrates along the great Irish lakes in spring, distributing itself widely over the midland bogs. Even during its short stay on our shores in spring and autumn, this bird is not safe from the attacks of the Peregrine Falcon, especially if the eyrie of the latter is not far off and contains

¹ During successive seasons I have noticed small numbers of Whimbrels throughout June and July on the slob-lands of Dublin Bay. From the middle of July they rapidly increase in numbers, and in this locality they are fairly plentiful until the first week in October.

In the Outer Hebrides a solitary bird remained from the summer of 1889 continuously through the seasons to 1893 (Dr. McRury, *Ann. Scot. Nat. Hist.*, vol. ii., p. 116). As suggested by Mr. Harvie-Brown, it may have been slightly wounded.

² At low water I have seen Whimbrels resting on seaweed-covered rocks with Turnstones, Purple Sandpipers, Redshanks, Curlews, and Oyster-catchers, the group being occasionally accompanied by a Cormorant or Heron.

young. I have on different occasions seen an exciting chase, and on May 4th, 1900, I suddenly surprised a large female Peregrine as she was standing on a sand-hill, but seeing me, she flew off, leaving behind her some picked bones and the feathers of a Whimbrel.

Flight. — The flight is steady and well sustained; it resembles that of the Curlew, and the two species, except for the difference in size, might easily be confounded on the wing.

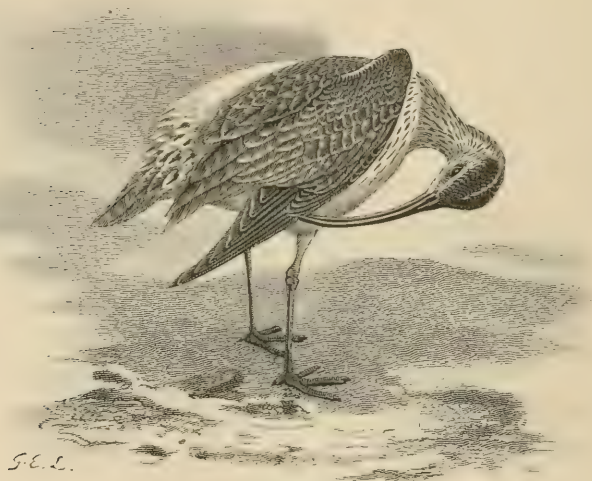


FIG. 50.—WHIMBREL.

Voice.—When the nesting-grounds are intruded upon, the birds, darting to and fro, utter a very excitable double-syllabled note, which is rapidly repeated. It sounds like *tetty-yetty yetty-tetty yetty-tet*. The familiar alarm-whistle, heard in autumn on the slob-lands, also when the birds pass high overhead on migration, may be syllabled *whce-whce-whce-whce-whce-whit*. Each syllable is repeated rapidly and receives equal accentuation.

Food.—Small crabs, sand-hoppers, shrimps, worms, and shell-fish, obtained along the sea-shore, are consumed in autumn and spring; away from the tide the Whimbrel eats

bilberries and earth-worms. In the gizzards of female Whimbrels obtained on Achill Island, co. Mayo, in May, 1900, I found remains of numerous beetles, the heads of which measured 5×4 mm.; also smooth brown larvæ 2 cm. in length, and pebbles measuring 4×4 mm.

Nest.—Like the Curlew, the Whimbrel makes for its nest a shallow hollow in the ground, as a rule amid coarse herbage. The eggs, four in number, are rather similar to those of the Curlew, but smaller. Incubation begins about the end of May.

The pugnacity evinced when an intruder appears at the breeding-haunts is very marked. Mr. Coburn tells me that, when in Iceland, he saw this species mob an Iceland Falcon; while Mr. Saunders has seen it attack an Arctic Skua.

The Whimbrel is not known to breed with certainty on the mainland of Great Britain, but a few pairs do so on some of the Orkneys, and larger numbers on the Shetlands. North Rona, in the Outer Hebrides, also bears records of it as a nesting-species.

Geographical Distribution.—Abroad, it breeds numerously in Iceland and the Faroes, also in the Arctic and Sub-arctic regions of Norway and Sweden; more sparingly in North Russia and Western Siberia. The autumn and winter migration extends over the European Continent, across the Mediterranean, along the African sea-board to the Cape. Westward this species visits the Canaries and Azores, eastward, India and other parts of Southern and South-western Asia, meeting with *N. variegatus*, the Eastern representative (*vide infra*).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—The Whimbrel so closely resembles the Curlew in the greyish and chequered pattern of the plumage-markings that it is quite unnecessary to give a detailed description of the former species. The chief points of difference are to be seen on the top of the head. Here, in the Whimbrel, two broad brown bands pass from the front to the back, separated by a median stripe of buffish-white (Fig. 50). These markings are present in both adult and immature birds, and at all seasons of the year. The back and wings of the adult Whimbrel are rather less chequered than the same parts of the adult Curlew.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Resembles the nuptial plumage, except that the throat, neck, breast, and abdomen, show more white.

Immature, male and female.—The upper plumage of the immature Whimbrel is even more finely chequered—giving it a more spotted appearance—than that of the immature Curlew.

BEAK. Proportionately shorter than that of the Curlew, but remarkably similar in the curvature and colour.

FEET. Brownish-green.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	17.5 in.	Female larger.
WING	...	10	„
BEAK	...	3.4	„ Longer in the female.
TARSO-METATARSUS	...	2.5	„
EGG	...	2.4 × 1.55	in.

Allied Species and Representative Forms.—*N. variegatus*, with the lower back more streaked in the adult than in the young, is the true Eastern representative. It inhabits the greater part of Siberia where it breeds, migrating over the Asiatic Continent and as far south as Australia.

N. hudsonicus, with the axillaries rich buff, is the American representative, but has been obtained in Iceland and once in Spain, whereas our own bird, as a wanderer, has been recorded from Greenland (Saunders).

ESKIMO CURLEW. *Numenius borealis* (R. J. Forster).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. viii, pl. 575 ;
Lilford, 'Coloured Figures,' vol. v, pl. 54.

During the autumnal migration this small American species has, on a few occasions, deviated from its usual line of migration and touched upon our shores.

It has been recorded from four maritime counties, which, with one exception, are on the east side of Great Britain. The earliest occurrence on record appears to be that of two specimens obtained in Suffolk, November, 1852; another is said to have been procured in the same county prior to 1870 (Babington, 'Birds of Suffolk'). The only other record from England appears to be that of a bird captured at Treseo on the Scilly Isles, September 10th, 1887, (Cornish, 'Zoologist,' 1887).

From Scotland there are three records:—One, a bird obtained from Kincardineshire, September 6th, 1855 (Yarrell, 'History of British Birds'); another from the same county was taken on September 21st, 1880 (Harvie-Brown, 'Zoologist,' 1880); a third example was secured in Aberdeenshire, September 29th, 1879 (Harting, 'Zoologist,' 1879).

The only Irish specimen hitherto recorded is one "said to have been shot in Sligo" (More, 'List of Irish Birds'). It was obtained in a poulterer's shop in William Street, Dublin, in October, 1870, where, according to Mr. Ussher, it was seen on the 21st and not purchased until the 28th of that month. It was presented to the Dublin Museum by the late Sir Victor Brooke.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Resembles the adult male nuptial plumages of the last two species, but differing in that there is no white over the tail, and the feathers of the breast and abdomen are buff-coloured with 'arrow-headed' markings; the axillaries are light brown, barred with a darker shade; the feathers of the top of the head are very similar to those of the Whimbrel, being dark brownish-grey, interrupted by a pale central stripe.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Resembles the nuptial plumage, but the breast and abdomen are less strongly marked.

Immature, male and female.—Back and wings, brown, thickly spotted with reddish-buff: throat and neck profusely streaked; 'arrow-headed' markings on sides of neck, breast, and abdomen, dusky-brown.

BEAK. Brownish-black.

FEET. Greyish-blue.

IRIDES. Dark brownish-black.

EGGS. "Olive-drab or light ash-green, blotched with various shades of brown" (Saunders): clutch, four.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	14	in.
WING	...	...	...	8.55	„
BEAK	...	...	...	2.5	„
TARSO-METATARSUS	...	...	...	1.75	„
EGG	...	...	...	2 × 1.5	in.

Order GAVIÆ.

Family LARIDÆ.

Sub-Family STERNINÆ.

BLACK TERN. *Hydrochelidon nigra* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 75; Dresser, 'Birds of Europe,' vol. viii, pl. 592; Lilford, 'Coloured Figures,' vol. vi, pl. 1.

Less than a century ago the Black Tern was quite a common summer-migrant to the south-eastern counties of England, where it bred in large numbers; but as in the case of the Ruff and other species, drainage has wrought such changes that no longer are these districts used as nesting-sites.

In April and early May,¹ small numbers make their appearance, not only on the coast, but about rivers, lakes, and marshes.

In the northern and western counties of England, this species is comparatively rare, but it is met with in many parts of the low-lands of Scotland. In the Hebrides and Orkneys it is not known.

Its visits to Ireland are irregular. Examples have been recorded from the following counties, chiefly during the autumn:—Kerry, Cork, Waterford, Tipperary, Louth, Mayo, Leitrim, Antrim, Down, Londonderry, Donegal, and Dublin. In the last-named county specimens have been most frequently obtained.

Of the birds which appear in August on the southern

¹ In the 'Zoologist,' 1901, p. 105, Mr. A. Patterson mentions that on May 8th, 1895, he saw forty-two of this species on the mud-flats of Breydon, in company with Gulls. On the same date of the previous year a flock of thirty was observed.

migration, the majority are immature, and with the exception of an occasional straggler, they move on in October. Like most of its race, the Black Tern is a fearless, unsuspecting little bird, and can be observed from close quarters.

Flight.—This species spends most of its time on the wing, and its flight is remarkably buoyant and graceful. When 'hawking' for insects, it can swerve adroitly and swoop to the ground with great speed.

Food.—Various insects, including dragon-flies, are captured on the wing, and grasshoppers, beetles, and other insects, are picked off the ground. This Tern also alights on the water, after the manner of Gulls, feeding on substances floating on the surface (Farran). Small fish and aquatic worms are also snatched up.

Voice.—The note, which is frequently uttered, is shrill and powerful for the size of the bird. It sounds like *creek-crick*.

Nest.—This species is gregarious at its breeding-haunts. It resorts to marshy ground, making a nest of grasses, rushes, and odd bits of aquatic herbage, but on some swamps the nest may be found almost, if not entirely, surrounded by shallow water. The eggs, three in number, are dull olive-green or brownish-green in colour, marked with large blotches and spots of dark brown.

As a breeding-species in the British Isles, the Black Tern has not been recorded since 1858, at which date the eggs were taken in Norfolk, a county where the bird bred in considerable numbers fifty years previously. In 1855 it is believed to have bred on the marshes of Solway (Saunders).

Geographical distribution.—Abroad, it nests numerously in Central and Southern Europe, also in North Africa; northward its range extends to the Baltic; eastward to Turkestan. On migration in autumn and winter it has been traced along both sides of Equatorial Africa.

Its geographical distribution is more restricted than that of the next species.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head and back of neck, black; rest of head and neck, dark greyish-black; back, wings, and tail, dull bluish-grey; tail, slightly forked; under wing-coverts, light grey; throat, breast, and abdomen, dark slate-grey; under tail-coverts, white.

Adult female nuptial.—Similar in plumage to the male, except that the breast and abdomen are somewhat paler in colour.

Adult winter, male and female.—Back of neck, forehead, throat, breast, and abdomen, white, showing some greyish barring.

Immature, male and female.—Top of head, back of neck, back, and wings, greyish, splashed with brown; tail faintly mottled with brown; otherwise the plumage resembles that of the adult in winter.

BEAK. Black.

FEET. Reddish-brown; toes only half-webbed.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	9·6 in.
WING	...	...	...	8·5 „
BEAK	...	...	...	1·25 „
TARSO-METATARSUS	...	...	...	0·6 „
EGG	...	...	...	1·45 × 1 in.

Allied Species and Representative Forms.—*H. surinamensis*, of blacker hue, and displaying white on the edge of the wing, is the American representative.

WHITE-WINGED BLACK TERN. *Hydrochelidon leucoptera* (Schinz).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 76; Dresser, 'Birds of Europe,' vol. viii, pls. 590, 591; Lilford, 'Coloured Figures,' vol. vi, pl. 2.

The south-eastern counties of England yield the most records of this scarce and irregular visitor. It is generally met with when migrating northward in May and June, though a few birds have been obtained in autumn and early winter.

The White-winged Black Tern has visited Norfolk, Sussex, Hants, Dorset, Devon, Cornwall, the Scilly Isles, Yorkshire, Durham, and Warwick.

It has been recorded six times from Ireland, having visited the following counties:—Dublin, Limerick, Tipperary, Waterford, and Clare.

The first British-taken specimen was shot in Dublin Bay in October, 1841 (Thompson, *Nat. Hist. Irel.*, vol. iii, p. 307). Another autumnal record is that of a bird killed at Ilfracombe, North Devon, early in November, 1870 (Saunders).

Three of the Irish specimens were obtained in the years 1874-75 (Ussher). More recently, *i.e.*, in 1893, another example was secured near Newmarket-on-Fergus, co. Clare, "where it was engaged in hawking for flies over a small lake" (Williams, *'Irish Naturalist,'* 1893, p. 253).

Flight.—In its general habits this bird resembles the preceding species. It chases and captures insects on the wing, and its flight is even more rapid and buoyant than that of the Black Tern.

Food.—Dragon-flies are consumed in considerable quantities, likewise aquatic insects, worms, and minute fish.

Voice.—Its cry is harsh and rather scolding in character, resembling the syllables *crick-creek*.

Nest.—This species, which is gregarious in the breeding-season has been found nesting in company with the Black Tern. Marshy grounds are usually resorted to, and the eggs, laid in May or June, are often deposited on floating vegetation. The nest is rudely constructed; it contains three eggs, coloured and marked not unlike those of the Black Tern.

Geographical distribution. — The White-winged Black Tern breeds in Central and South-eastern Europe, and in Temperate countries of Asia. On its southern migration it reaches South Africa and Tropical Asia, and many birds travel to Australia. Exceptionally, it has been procured in New Zealand and in North America.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head, neck, and back, glossy-black; wings, chiefly greyish; feathers covering the fold of the wing (carpal joint), pure white; primaries, frosted with 'pearl' grey on a ground-colour of black; tail and upper tail-coverts, pure white; tail, slightly forked; breast and abdomen, black, the latter tinged with brown; under tail-coverts, white; under wing-coverts and axillaries, black.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Head, neck, breast, wing-coverts, and abdomen, white; back, scapulars, and tail, grey.

Immature, male and female.¹—Resembles the adult winter-plumage, except that the back and wings are mottled with brown.

BEAK. Livid red.

FEET. Orange-red; toes only half-webbed.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	9.3 in.
WING	...	...	...	8.25 "
BEAK	...	...	...	1 "
TARSO-METATARSUS	...	...	...	0.75 "
EGG	...	...	...	1.35 × 1 in.

WHISKERED TERN. *Hydrochelidon hybrida* (Pallas).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 77; Dresser, 'Birds of Europe,' vol. viii, pl. 588, 589; Lilford, 'Coloured Figures,' vol. v, pl. 3.

The Whiskered Tern is a very rare and an uncertain visitor which on migration has wandered to the British Isles. Like the preceding species it has been obtained most often in the south-eastern section of England. The earliest known capture is that of a bird taken at Lyme in Dorset, about the end of August, 1836 (Yarrell, Hist. Brit. Birds, 3rd Edition). Three years later (September, 1839), one was obtained at the mouth of the River Liffey, Dublin. This bird is preserved in the Dublin Museum, and is the only Irish specimen at present in existence (Thomson, Ann. Nat. Hist. vol. xx, p. 170). Since then, specimens have been secured

¹ This species may be distinguished from the immature Black Tern by its shorter beak, longer toes, and more deeply incised webs; the rump and tail are paler, and the wedge of white on the inner web of each primary is better marked; tail and the feathers covering the carpal joint do not become pure white until the third year (Saunders).

from :—Yorkshire, one, 1842 (Saunders, *Man. Brit. Birds*, 2nd Edition); Norfolk, one, June 17th, 1847 (Stevenson, 'Birds of Norfolk,' vol. iii); the Scilly Isles, one, August, 1851 (Rodd, 'Birds of Cornwall'); Devonshire, one, May, 1865 (D'Urban and Matthew, 'Birds of Devon'); Hampshire, one, June, 1875 (Saunders, *Man. Brit. Birds*, 2nd Edition); Norfolk, one, October, 1890 (Southwell, *Trans. Norf. Nat. Soc.*, vol. v, p. 205). The most recent record appears to be that of an adult male, shot at Nithsdale, in Dumfriesshire, on May 28th, 1894. This, the only Scotch specimen, is preserved in the Edinburgh Museum.



FIG. 51.—TAIL OF WHISKERED TERN. $\frac{1}{2}$ Nat. size.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head and back of neck, black; a broad white stripe extends from the gape of the mouth to the back of the neck, this is the 'whisker,' after which the bird is named; back, scapulars, and wings, slate-grey, darker on the shoulders and on the primaries, the frosting on the latter being 'pearl' grey; chin and throat, greyish-white; breast, light slate-colour; abdomen and flanks, dark greyish-black; under wing-coverts, white; axillaries, greyish-white.

Adult female nuptial.—Similar in plumage to the male, but a little paler in tint.

Adult winter, male and female.—Forehead, breast, and abdomen, white; top of head and back of neck, thinly streaked with black; back, scapulars, and wings, paler than in the nuptial plumage.

Immature, male and female.—Top of head and back of neck, blackish-brown; back and wings, mottled with brown; tail, sparsely speckled and margined with light brown.

BEAK. Blood-red.

FEET. Vermilion-red; webs deeply incised (Fig. 52).

IRIDES. Dark brown.

EGGS. Pale green in ground-colour, varying to stone-grey, blotched with brown and black: clutch, three.



FIG. 52.—LEFT FOOT OF WHISKERED TERN. Nat. size.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	11	in.
WING	...	...	...	9·4	„
BEAK	...	...	...	1·4	„
TARSO-METATARSUS	...	...	...	0·9	„
EGG	...	...	...	1·55 × 1·15	in.

GULL-BILLED TERN. *Sterna anglica* (Montagu).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 74; Dresser, 'Birds of Europe,' vol. viii, pl. 585; Lilford, 'Coloured Figures,' vol. vi, pl. 4.

Montagu first identified this rare British visitor from a specimen taken in Sussex. Subsequently several have been

secured, chiefly from the south and east of England, and nearly always in spring and summer. The Gull-billed Tern has been recorded from the following counties:—Norfolk,¹ Kent, Sussex, Hants, Devon, Cornwall, and the Scilly Isles, while a few birds travelling further north, have been taken in Yorkshire and in Lancashire.

As yet this species has not been substantially recorded from either Scotland or Ireland. The bird mentioned in the 'Zoologist' for 1887 (p. 433), as a Gull-billed Tern (*Sterna anglica*) shot in Belfast Lough, was afterwards examined by Mr. Howard Saunders, and proved to be an immature male Arctic Tern.

Flight.—The "flight is graceful but not very rapid, the long wings being plied with steady, measured strokes" (Saunders).

Food.—This species takes its food by pursuing insects on the wing, pouncing on beetles and grasshoppers, while in the vicinity of water it picks up small fish, shrimps, and crabs.

Voice.—The breeding-note resembles the syllables *che-áh*; the ordinary cry of alarm sounds like *af-af-af* (Saunders).

Nest.—The nest is usually scraped out in sandy soil, and is but a shallow hollow, lined with bits of dry seaweeds and grasses. The eggs, three of which constitute the clutch, vary in ground-colour from buff to greenish, and are blotched with different shades of brown.

Geographical distribution.—The Gull-billed Tern breeds in many countries of Southern Europe, from Spain eastward to the Black Sea, also in Denmark. It nests over a wide area in Temperate Asia, North Africa, North and Central America, including the West Indies. On migration in autumn it wanders to the southern limits of Asia and America, in the latter country to lat. 48° S.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head and back of neck, jet-black; back, scapulars, and wings, 'pearl' grey;

¹ In the 'Zoologist' for 1901, p. 105, Mr. Patterson, writing on the 'Birds of Great Yarmouth,' states, that of ten examples of Gull-billed Terns recorded from Norfolk, nine were obtained on Breydon, the earliest of which was captured on April 14th, 1849, the most recent on September 5th, 1896.

primaries, frosted with a similar colour which, when worn, shows a darker ground-shade; breast and abdomen, white.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Head, white, with brownish-grey streaks, which form patches on either side of the eye and over the ear.

Immature, male and female.—Head streaked with greyish-black; back, scapulars, and wings, mottled and striped with brown and tinged with light yellowish-buff.

BEAK. Black; strong and thick.

FEET. Black, tinged with red; webs moderately indented.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	15 in.	Female slightly smaller.
WING	...	12·5	„
BEAK	...	1·9	„
TARSO-METATARSUS	...	1·5	„
EGG	...	2 × 1·4	in.

Allied Species and Representative Forms.—*S. macrotarsa*, larger in size and with lighter coloured plumage, breeds in Australia.

CASPIAN TERN. *Sterna caspia* (Pallas).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 68; Dresser, 'Birds of Europe,' vol. viii, pl. 584; Lilford, 'Coloured Figures,' vol. vi, pl. 5.

It is rather remarkable how irregular the visits of this species of Tern are to our coasts, for, as pointed out by Professor Newton,¹ it is a bird of wide distribution; moreover, some of its breeding-stations are at no great distance from the British Isles. As in the case of other rare Terns, it has been taken most frequently in the maritime counties of the east and south of England.

¹ 'Dictionary of Birds,' p. 957.

The Caspian Tern has visited :—Yorkshire, Lincolnshire, Norfolk,¹ Suffolk, Kent, Hampshire, and Dorset. A specimen was also observed near the Farne Islands on June 6th, 1880 (E. Bidwell, 'Zoologist,' 1887). "As regards Scotland, Mr. Oswin Lee states that he made a sketch of one of two birds noticed at the Findhorn bar on June 12th, 1887" (Saunders, Man. Brit. Birds, 2nd Edition, p. 641). From Ireland there are as yet no records.

This species may be distinguished by its size, being the largest of all British Terns. It has been found frequenting lakes as well as the sea-coast.

Flight.—On the wing it is powerful, swift, and buoyant.

Food.—The food consists chiefly of small fish.

Voice.—The note, vociferously uttered if the breeding-haunts be invaded, is very harsh and scolding in character, resembling the syllables *krake, krake*.

Nest.—The nest is a shallow depression, sometimes lined with broken shells or bits of stick. The eggs, laid in May or June, are stone-coloured, blotched with light grey and dark brown. Two to three form the clutch.

Geographical distribution.—The Caspian Tern breeds in colonies on the sandy shores and islands of Sweden and Denmark, also on the North Frisian Islands, notably Sylt. Mr. Saunders believes that it has nested still nearer to the British coast, viz., on the shores of Holland south of the Maas. On July 9th, 1875, he observed six adults flying in pairs, evidently going out to fish in the early dawn.

This Tern is also widely distributed as a nesting-species in Southern Europe, Asia, Africa, Australia, and New Zealand, and in North and Central America. On migration, in autumn it passes over Southern Europe and Asia, reaching India and Ceylon. Westward, it migrates along the American sea-board, but in the Southern Hemisphere it appears to be resident.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head and back of neck, glossy greenish-black; rest of neck, breast, and

¹ In the 'Zoologist' for 1887, p. 457, Mr. Gurney states that nine Caspian Terns were obtained, and others observed, on the Norfolk coast between 1825 and 1860. Stevenson, in his 'Birds of Norfolk,' vol. iii., p. 296, mentions nine Caspian Terns obtained at Great Yarmouth.

abdomen, white; back, scapulars, and wings, 'pearl' grey; tips of primaries, frosted on a dark ground-colour; tail, greyish-white, and slightly forked.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Top of head streaked with black and white; dark greyish-black patch behind the ear-coverts.

Immature, male and female.—Top and front of head, whitish; back, scapulars, wings, and tail, marked with ash-brown; primaries, ash-grey.

BEAK. Vermilion-red.

FEET. Black.

IRIDES. Dark brownish-black.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	20 in.	Female smaller.
WING	...	...	16.5	„
BEAK	...	...	3.3	„
TARSO-METATARSUS	...	...	1.6	„
EGG	...	...	2.5 × 1.7	in.

SANDWICH TERN. *Sterna cantiaca* (J. F. Gmelin).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 69; Dresser, 'Birds of Europe,' vol. viii, pl. 586; Lilford, 'Coloured Figures,' vol. vi, pl. 6. Booth, 'Rough Notes,' vol. iii, pl. 32.

This fine bird, so named, because it was first observed frequenting the vicinity of Sandwich on the coast of Kent in 1784, is an annual spring-visitor to the British Isles. It arrives comparatively early, appearing in some localities before April, migrating southward early in autumn.

Though found in widely distributed colonies, this species is far from being plentiful. It breeds in most of the southern and eastern counties of England, also in Cumberland, and on Walney Island off the coast of Lancashire. Colonies, moreover, exist along various points of the Scottish sea-board, especially on the east side, and in 1893, it was discovered breeding in one of the Orkneys.

A well-known colony, of considerable numbers, frequents the Farne Islands.

In Ireland, the Sandwich Tern appears to be very locally distributed. The first record of its occurrence was made known by Thompson, from a specimen procured on Belfast Lough in September, 1832 (Proc. Zool. Soc. Lond., 1833). From that time little was known of the bird until April, 1851, when Mr. Warren observed it in Killala Bay. In May, 1857,¹ he found limited numbers breeding on a small lough near Ballina. Recently, viz., July 12th, 1900, the same observer discovered twenty pairs of old birds flying about an island in Lough Erne, co. Fermanagh. All the young were apparently hatched out and "had either fled out on the lake with the young Black-headed Gulls, or concealed themselves among the weeds growing in dense thickets about the island." A young bird, a day or two old, examined from this colony, ejected from its gullet a sand-eel, which was, in all likelihood conveyed from the sea-coast at a distance of some fifteen miles. Mr. Warren states that he did not note these Terns fishing on the fresh-water lakes. Two newly-laid eggs and three somewhat incubated, were found in this locality ('Irish Naturalist,' 1900, p. 222).

On May 24th of this year on an island in Lough Conn, the same observer discovered "on a little space of about four yards square," . . . "thirty-five nests with eggs, and two more a little apart from the group of nests. Most of the nests had only two eggs, while several had only one, evidently showing that the full clutches of three had not been laid yet, and also that probably many more pairs had not begun to lay so early in the season" ('Zoologist,' 1906, p. 278).

Mr. Warren further writes me that "there were on the same island a few nests of Common Gulls, which was surprising, for the Common Gulls keep away from all the others, nesting by themselves on separate islands or on isolated rocks."

This bird is not exclusively marine in its habits, though decidedly partial to the sea-coast. Compared with the Common, or Arctic Tern, it is much larger and of heavier build. To fishermen it is known as the 'Tern,' the several smaller

¹ But the late Mr. J. J. Watters, of Dublin, appears to have been the first to discover it breeding on the Irish Coast, viz., on Rockabill Island, July 17th, 1850, where he found a broken egg, and saw three birds.

common species being designated collectively 'Sea-swallows.' In the early season, that is, soon after its arrival on our shores and before incubation has commenced, the Sandwich Tern spends much of its time on the wing.

Flight.—The flight is buoyant and rapid ; yet as in the case of other Terns, the beat of the pinion is slow and evenly-measured. Mr. Warren has noted, especially on fine, bright days, the manner in which this species ascends in wide wheeling circles, until almost out of sight.

Voice.—The cry is peculiarly harsh, unmusical, and scolding in character ; the note may be syllabled *garēk*, *grēk*, or *kirhitt*.

Food.—The staple diet, on which the young are chiefly fed, appears to be Sand-eels. Small surface-swimming fish, such as herring-fry, and in less quantity, crabs, shrimps, and insects, are also eaten.

Nest.—The Sandwich Tern breeds on islands as well as on the mainland. Low-lying, sandy shores, preferably those studded with shingle and bits of dried seaweed, are the sites usually selected ; but when persecuted, the birds will often shift their quarters. The nests, many of which may be in close proximity, are only slightly hollowed out. In some places they are more or less built up with bits of sticks, or dry bent, and scantily lined with fragments of dried grass or seaweed ; but the eggs are usually laid in the sand in naked hollows, which are loosely surrounded with stones and bits of sea-wrack.

The eggs, two, more rarely three, to the clutch, vary in colour from greyish-white to rich stone or buff. Some are blotched and streaked with black and grey, others with reddish-brown.

Geographical distribution.—Abroad, the Sandwich Tern breeds in South-eastern Europe, Asia, and North Africa, also in North America. On migration, it reaches Cape Colony, Central America, and India.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head and back of neck, black, the feathers of the latter are pointed and slightly elongated forming a crest ; back, scapulars, and wings, 'pearl' grey ; primaries, dark greyish on the outer

web, but chiefly pure white on the greater part of the inner web; tail and rump, white; fork of tail, short; throat, breast, and abdomen, white, often suffused with a delicate salmon-pink, which disappears soon after death.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Resembles the nuptial plumage, but the forehead, and the back of the neck are nearly white streaked with black.

Immature, male and female.—Head barred with black and white; back, wing-coverts, and tail, marked with angular black lines.

BEAK. Black, except the tip which is pale yellow.

FEET. Black.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	15 in.
WING	...	...	...	12 "
BEAK	...	...	...	2.5 "
TARSO-METATARSUS	...	...	...	1.2 "
EGG	...	...	...	2 × 1.5 in.

ROSEATE TERN. *Sterna dougalli* (Montagu).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 71; Dresser, 'Birds of Europe,' vol. viii, pl. 581; Lilford, 'Coloured Figures,' vol. vi, pl. 7; Booth, 'Rough Notes,' vol. iii, pl. 33.

To Dr. MacDougall, of Glasgow, is due the credit of having first identified this species on the Cumbræ Islands in the Firth of Clyde. Selby subsequently (about 1825) found 'a numerous colony' breeding on the Farne Islands, which are still visited, though in small numbers. Some years ago the Roseate Tern was more widely distributed as a spring-migrant; several former nesting-stations are now deserted, the birds having been driven away in many cases by persistent persecution.

Scattered pairs and small parties may still be seen along the east and south coasts of England, but on the opposite shores the bird is rare. Such islands as Foulney and Walney, off Lancashire, formerly breeding-stations, are seldom visited. Recently, however, it is known to have nested in Wales, while Mr. Oswin Lee appears to have identified it as breeding in the Moray Firth (Saunders).

In Ireland this bird once had several breeding-resorts on the east coast. A large colony frequented Mew Island, one of the Copelands, off the coast of co. Down, and was well known to Thompson.

After 1850 its numbers greatly diminished as a result of persistent molestation. Mr. Ussher is of the opinion that this colony may not be quite exterminated, but at present it can be represented only by a few pairs. However, it is probable that this species frequented the above neighbourhood many years after Thompson's time; on August 14th, 1890, I observed three of these birds in Belfast Lough. They were busily fishing and were remarkably tame. They passed within a few yards of the bow of my boat, so that I could discern their long forked tails and black beaks quite easily.

Rockabill, an island off the Dublin coast, was also known to Thompson as a breeding-station. Here numbers of Roseate Terns used to congregate. But they were ruthlessly shot¹ down in the nesting-season, and their eggs were pillaged to such an extent that in less than half

¹ The wholesale butchery of certain birds for millinery purposes cannot be too strongly deprecated. I have seen Terns slaughtered by the score in the space of a very short time. A boat containing two men, each armed with a double-barrelled gun, was sculled into the thickest part of a Tern-colony. The fearless birds, trustful and inquisitive by nature, seeing their haunts intruded upon, collected into a brave and clamorous throng which rapidly advanced until, with quivering pinions, many of them poised overhead. The collectors waited until the members of the flock were closely clustered, so that more than half a dozen of these beautiful pearly-plumed birds fell at the first discharge of the guns, and were floating lifeless on the surf, save one or two which, with shattered pinions, were struggling to rise off the crest of the breakers on which they were miserably tossing. Their brave comrades hovered over them with eyes filled with enquiry, as though anxious to succour them in distress. These also dropped, one by one, in rapid succession, like white stones into the water, as the plunderers, seizing each opportune moment, discharged cartridge after cartridge in quick succession. And not until every available bird was shot and the sea studded with the dead and wounded, did the gunners desist from their disgraceful task.

a century this fine colony ceased to exist. Parts of the Wexford¹ coast may also be mentioned where this bird bred plentifully over fifty years ago (Ussher).

The summer visits of the Roseate Tern to our shores appear to be of shorter duration than those of other species, not that the bird arrives so much later, but that it departs earlier, in fact, directly the young can fly. It is seldom seen on our coasts after August.

This species is so called on account of the beautiful though evanescent pink tint of its breast-feathers, which fades soon after death, so that in dry skins it is not discernible. This delicate tint is not peculiar to the Roseate Tern, though more pronounced in this than in other species. A splendid pair of Sandwich Terns, which I had the pleasure of mounting, exhibited in a less degree, a warm rosy glow under the surface of the breast-feathers. Black-headed Gulls and several others are similarly tinted about the breast in the adult nuptial plumage.

Flight.—No Tern is more graceful than the Roseate on the wing. Its more slender form, longer forked tail so well displayed as it poises in the air, the more rapid strokes of its pointed pinions, are characteristics by which it can be distinguished from its larger and more sturdy congeners.

Food.—This bird is almost exclusively marine in its habits and lives chiefly on small surface-feeding fish.

Ornaments for hats! Can such appeal to those of us who have watched with delight, not only the graceful movements, but also the elegant form of these birds in life? Look at the plumage in a state of nature with each feather in its own place, perfectly smooth and unruffled, and at the beautiful tints of the breast, the legs, the beak, tints which fade when life is taken. Can the soft expression of eye, with humid lids, be reproduced as in life? Compare the living bird with the stuffed skin which, with ruffled and often broken quills, is skewered and twisted out of shape, almost beyond recognition, to fit the head-garb which it is supposed to bedeck. Observe the glass eyes! Unnatural in colour and glaring in expression, with not even a vestige of dry skin to represent the lids which lie shrunken far back in the orbits. In short, what an effigy of its former self is thus represented, and yet wearers exult in its fancied beauty! Happily, however, there are many bird-lovers who can view those so called 'ornaments' only with utter distaste. Happily, too, much good is being done by the Societies for the Protection of Birds, in both Great Britain and Ireland, to prevent this wanton destruction of birds for useless, even for grim purposes.

¹ On April 30th, 1897, Mr. Barrington received a male from Hook Tower Lighthouse, co. Wexford, which was killed when striking ('Migration of Birds').

Voice.—The voice is harsh, and the alarm-note resembles an angry *krake-krake*.

Nest.—In some localities this species will associate with colonies of Arctic and Common Terns, breeding on rocky islands, and sandy shores strewn with shingle, seaweeds, and fragments of bent. The eggs, two to three in number, are generally deposited in a slight hollow scooped in the shingle. They show much variation in colour, from yellowish-white to warm buff, blotched with shades of grey and brown. They are on an average longer in shape than those of the Arctic Tern.

Geographical distribution.—Abroad, the Roseate Tern nests sparingly in Central Europe, and more plentifully in the South, in Asia as far as the Tropics, in Africa, especially in the Northern Section, and in America to the latitude of the West Indies. On migration it is widely distributed over the Tropical and Southern Seas.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head and back of neck, black; rest of neck and throat, white; back, scapulars, and wings, pale 'pearl' or 'french' grey, darker in shade than in the last species; primaries, 'pearl' grey, of a darker shade than the rest of the wing-feathers; white on the inner margins of primaries, well defined and extending to the tips and even a short distance along the outer web; rump and tail-feathers, very pale 'pearl' grey shading to white; outer webs of long outer tail-feathers, pure white; fork of tail of considerable length; breast and abdomen, white, suffused with an evanescent delicate 'salmon' pink.

Adult female nuptial.—Similar to the male plumage, but the outer tail-feathers (streamers) are a little shorter.

Adult winter, male and female.—The forehead is spotted with white, and the pink tint of the breast and the abdomen is very faint.

Immature, male and female.—Forehead streaked with white; top of head and back of neck, brownish-black; back and wings, marked with ash-brown.

BEAK. Almost entirely black except in the breeding-season, when it exhibits an orange colour at the base.

FEET. Orange-red.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	15·5	in.
WING ... ..	...	...	9·25	„
BEAK ... ..	...	...	1·9	„
TARSO-METATARSUS	...	...	0·87	„
EGG ... ..	...	...	1·7 × 1·15	in.

COMMON TERN. *Sterna fluvialitis* (Naumann).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 70; Dresser, 'Birds of Europe,' vol. viii, pl. 580; Lilford, 'Coloured Figures,' vol. vi, pl. 8.

The Common Tern, familiarly known as the 'Seaswallow,' is plentifully distributed in summer along our coasts, and about the shores and islands of inland lakes. On the whole, it is probably the most abundant of British Terns, though the succeeding species predominates on the coasts and marine islands of North Britain, and is also the most numerous in Ireland. North of the Moray Firth on the east, and of the Island of Skye on the west of Scotland, it becomes much scarcer, and previous to the year 1901 there was no substantiated evidence to show that it bred in the Shetlands (Eagle Clarke, Ann. Scot. Nat. Hist., 1902, p. 121). In the Orkneys and Outer Hebrides colonies are now known to exist.

The majority of Common Terns reach us about the end of April or beginning of May, departing gradually during August and September for more southern latitudes. During early October, limited numbers pass along the British coasts, while I have seen a few solitary birds on inland waters at that time of year. In the autumn, young and old consort together, flying for miles along the coast in pursuit of the 'schools' of herring- and mackerel-fry.

Flight.—Most of us have seen these beautiful and clamorous birds wing their way, some by the edge of the breakers, others further out from the shore. One after another, they poise with quivering pinions, hovering like Kestrels, searching for their prey which moves beneath them.

What keen sight they must possess, seeing as they can, the little fish under the surface of the water! Like miniature Gannets they precipitate themselves fearlessly with a

splash into the open sea, from which they rise with almost the velocity of a leaping trout. Playful, yet a trifle quarrelsome by nature, some of the party pursue their companions with a rapid sweep of wing, now ascending, now descending, until half exhausted in the chase, numbers settle on the water with buoyant pose, to enjoy a quiet swim.

A remarkably graceful and well-sustained flight is characteristic of the whole group of Terns, but on the ground, they make little progress, as their feet are short and very small.¹

When not incubating, they spend much of their time in the air.

Food.—Small fish constitute the main diet; insects, crabs, and shrimps, are also eaten.

Voice.—This species, and indeed most other Terns are extremely vociferous when their breeding-haunts are intruded upon. With angry aspect and gestures the members of a colony will boldly advance to meet the enemy, and, though their voices may be harsh and unmusical, the tone is piteous and most expressive.

The note resembles the syllables *krick* or *krē-ick*, the rolling sound of the *r* being distinctly heard.

Nest.—Large numbers nest together in colonies on low, stony islands of inland lakes,² scantily overgrown with grasses and other plants, which form favourite breeding-resorts. The eggs are deposited among loose stones, which they resemble in colour to a great extent, in the hollows between rocks, or more concealed from view in shallow depressions in the grass.

Smaller numbers, in company with Arctic Terns, breed along our sea-coasts and on marine islands.³ Here I

¹ During September I have frequently observed flocks of Common and Arctic Terns, prior to migration, standing for a considerable time on the bare sands which skirt the shores of Dublin Bay. The majority of the birds as a rule rest quietly, enjoying a bask in the warm sunshine. A few, however, may be seen pattering about a short distance from the others with wobbling and awkward gait.

² In Ireland, no less than fourteen inland lakes are frequented by colonies of considerable numbers of breeding-birds (Ussher).

³ It is interesting to note that for several years past the Common Tern had ceased to breed on the islands off the Dublin coast. In the summer of 1902 a small colony reappeared on Skerries Island, when I found nests and eggs and saw the old birds carrying fish to feed their young. Since then they have repeatedly bred in this locality, adequate protection being afforded them.

have found the eggs laid among broken shells, sand, and gravel, and sometimes surrounded with clumps of dry seaweed.

The eggs, three in number, are seldom laid before the last week in May, incubation not becoming general until early in June. They vary much in colour from dark brownish to light stone-buff, blotched with light and dark brown.

The mottled nestlings closely harmonise with their surroundings.

Considering their small size, Terns are wonderfully courageous in defence of their young and eggs. Birds of almost any size, predatory or otherwise, are bravely confronted, and as a rule successfully driven off. I have seen Kestrels, Herons, and Hooded Crows, mobbed and scolded to such an extent that they retreated without showing the least resistance.

*Geographical distribution.*¹—The Common Tern is remarkable for its wide distribution as a breeding-species. It is found over Temperate Europe, while westward, it extends to North America and eastward to Asia. It also breeds in North Africa. On migration it reaches Cape Colony, India, and other countries in Southern Asia, and South America as far as Brazil.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Forehead, top of head, and back of neck, black; cheeks, chin, sides of neck, and throat, white; back, scapulars, and wings, dark 'pearl' grey; the inner web of each outer primary being marked with a *broad streak of very dark grey*; breast and abdomen, pale vinaceous-grey; tail-feathers, white, edged externally with grey, which is darkest on the outer tail-feathers; under tail-coverts, white.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Forehead and top of head, streaked and spotted with white; breast and abdomen, white, with the merest trace of vinaceous tint.

Immature, male and female.—Forehead, white; top of head and back of neck, streaked with blackish-brown; back,

¹ On September 6th, 1906, I observed two Common Terns, flying strong and buoyantly at about a distance of 1,345 miles west of the British Isles, latitude 56° 14' N., longitude 33° 2' W., North Atlantic.



H. Brooke, Photo 1

COMMON TERNS, ARCTIC TERN, AND LITTLE TERNS.

From specimens collected and mounted by the author; B and C mounted by the late Mr. E. Williams.

(For reference to figures see text.)

scapulars, and wing-coverts, barred and mottled with ash-brown; outer web of tail-feathers, grey; inner web, white: breast and abdomen, milk-white.

BEAK. Orange-red with brownish-black tip.

BEAK. (Immature Bird.) *Reddish-yellow with dark brown tips* (*cf.* Arctic Tern).

FEET. Deep red.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	14.25 in.
WING	...	...	...	10.5 „
BEAK	...	...	...	1.7 „
TARSO-METATARSUS	...	...	...	0.85 „
EGG	...	...	...	1.7 × 1.1 in.

ARCTIC TERN. *Sterna macrura* (Naumann).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 72; Dresser, 'Birds of Europe,' vol. viii, pl. 579; Lilford, 'Coloured Figures,' vol. vi, pl. 9.

In its habits and plumage this greatly resembles the preceding species, though differing considerably in distribution over the British Isles. The northern range of the Common Tern overlaps that of the Arctic; this is well seen about the latitude of the Northumberland and Lancashire coasts, where, as on the Farne and Walney¹ Islands, both species freely breed in company.

Proceeding southward, this species diminishes² as the Common Tern increases; northward, the Arctic predominates; above the latitude of the Moray Firth and the Island of Skye the Common Tern is much reduced in numbers.

¹ On Walney Island, the Common Tern appears to be the more numerous species.

² Small numbers of Arctic Terns are to be found breeding as far south as the Scilly Isles.

On the Scottish Islands¹ it is the Arctic Tern which forms numerous colonies.

All round the Irish coast this species is plentiful in summer. In many localities, especially in the south, it breeds in company with the Common Tern. But the former, more maritime in its habits, far exceeds and even replaces its congener on some of the marine islands of the north and west. Mr. Ussher mentions that vast colonies, apparently unmingled with other species, resort to the islands off Donegal and Sligo.

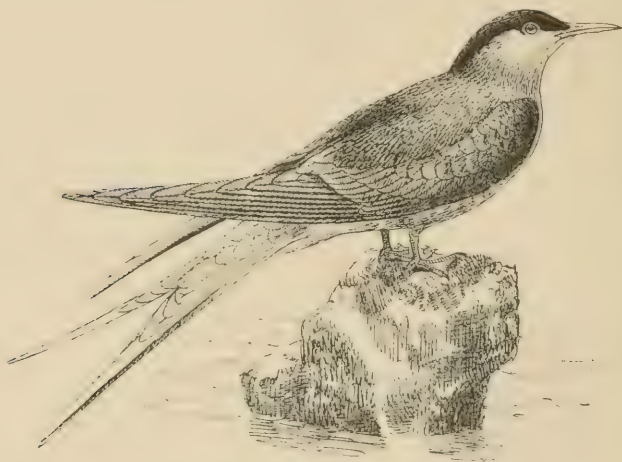


FIG. 53.—ARCTIC TERN.

I have seen large assemblages on the Blasket Islands off Western Kerry. Rockabill, on the Dublin coast, is no longer a breeding-station, yet I have observed large numbers in the vicinity of Dublin Bay in autumn prior to migration. In Thompson's time this used to be the most abundant species of Tern on the east coast of Ireland. Over the flat and shingly shores of Killala Bay, it has increased as a nesting-species (Warren). Moreover, Ireland²

¹ Though according to Mr. Harvie-Brown the Arctic Tern is diminishing as a breeding-species on the Outer Hebrides as the Common Tern is on the increase.

² Also Scandinavia and Arctic America.

is one of the few countries where it breeds on the islands of fresh-water lakes, such as Corrib, Mask, Carra, and Melvin, all situate in the western province.

Early in May, the Arctic Tern arrives in our Isles, departing southward in August and September. Before migrating, adults and young may be observed flying together along the coast in search of food.

Immature birds, one year old, are not often seen; they may be distinguished from Common Terns at a corresponding age by their entirely black beaks.¹

This bird is perhaps one of the bravest and most pugnacious of its kind. I have seen a small flock not only assail, but even follow a Merlin over the sand, and with wild screams and dashing flight, completely hinder the little Falcon from following up the smaller shore-birds upon which it so largely preys. "A flock has been seen to mob and drown a Hooded Crow" (Saunders).

Flight.—The flight is particularly buoyant and on the wing the Arctic Tern is difficult to identify² from the Common; the latter is somewhat larger, and the fork of its tail is shorter.

Voice.—The note, so often heard when the bird is overhead, sometimes sounds harsher, and more prolonged than that of the preceding species; at other times the two voices are practically indistinguishable.

Food.—This consists largely of fish captured after the manner of other Terns.

Nest.—Marine islands fringed with loose stones and shingle, as well as sandy beaches, are the favourite nesting-sites, and immense colonies are frequently to be found in such places. The eggs, two to three in number, are laid either on bare rocks often quite close to the sea, or among fragments of dry grasses or seaweeds, or they may occupy a slight hollow in sand and shingle. They are subject to much variation in colour; some are light greenish-brown,

¹ On October 15th, 1890, I picked up an immature Arctic Tern on Bray beach, twelve miles south of Dublin. The bird, in its second autumn plumage, was fresh and in good condition, but soaking wet; it was probably washed ashore after a gale.

² It is much easier to identify the two species when congregated on bare, rocky islands. I have quietly sculled a boat close enough to see the short feet and coral-red beaks of the Arctic Terns, an observation all the more evident when the birds are standing on a rock which is elevated to about the level of the observer's eye.

others rich reddish-brown, usually heavily blotched with darker shades of brown, or they may be finely speckled or not marked at all. They resemble those of the Common Tern, but are, on an average, smaller.

Incubation seldom becomes general before the end of the first week in June. As with other Terns, the males bring fish to feed the females when incubating.

In defence of its young and eggs, the Arctic Tern possesses undaunted courage.

Geographical distribution.—North of the British Isles, the breeding-range is circumpolar, and this species reaches far within the Arctic circle. It has been obtained above lat. 82° N. On migration in autumn it extends widely over the European, Asiatic, and African Continents, even to lat. 66° S., *i.e.*, beyond New Zealand (Saunders).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—This species so closely resembles the Common Tern in plumage that it is only necessary to point out the distinguishing features. In the Arctic Tern the breast and abdomen are of a uniform ‘french’ or ‘pearl’ grey, without a vinaceous tint. Chin, cheeks, and throat, also grey, but paler in shade; tail-feathers, white, edged externally with very pale grey; the outer feathers of the tail longer, and *the grey stripe on the inner web of each outer primary paler and narrower than in the Common Tern.*

Adult female nuptial.—Similar to the male plumage; outer tail-feathers shorter.

Adult winter, male and female.—Forehead and top of head, mottled with white; breast and abdomen, paler than in the nuptial plumage.

Immature, male and female.—Forehead and top of head, whitish; back of head, blackish; sides of neck, washed with buff; back of neck, back, and wings, mottled and barred with buff; outer web of tail-feathers, greyish; breast and abdomen, white.

BEAK. Coral-red.

BEAK. (Immature Bird.) *Black* (*cf.* Common Tern).

FEET. Dull red.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	14.5 in.
WING	...	...	...	10 "
BEAK	...	...	...	1.6 "
TARSO-METATARSUS	...	...	...	0.7 "
EGG	...	...	...	1.6 × 1 in.

Allied Species and Representative Forms.—The Eastern representative, *S. longipennis*, has a black bill, small ruddy legs and feet, and grey under-plumage (Saunders).

LITTLE TERN. *Sterna minuta* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 73; Dresser, 'Birds of Europe,' vol. viii, pl. 582; Lilford, 'Coloured Figures,' vol. vi, pl. 10.

This neat little species—the smallest of the British Terns—though common, is not by any means as plentiful as either of the two preceding birds. It seldom arrives before the beginning of May, taking its departure for more southern countries during September and early October. In July and August, adults and young may be seen together on the wing, generally not far from their breeding-haunts.

Low-lying and sandy stretches of beach, strewn with broken shells and shingle, are its favourite haunts. Large flocks are nowhere common, but small parties, pairs, and solitary birds are usually met with flitting to and fro in quest of food.

The Little Tern is seldom met with away from the coast. Mr. Ussher, in his 'Birds of Ireland,' p. 326, mentions that he observed a pair fishing on Lough Corrib, eight miles from Galway Bay, in the middle of the breeding-season (June 5th, 1897), but he did not find the nest.

This species does not differ materially in its general habits from its larger congeners.

At ebb-tide, on flat, sandy coasts, I have noticed Little Terns fishing in shallow salt-water channels, but a few inches deep. As the birds plunged headlong with a splash,

they were scarce able to submerge themselves, yet they must have struck the bottom in their descent. I found shrimps and tiny crabs swarming on the bed of the channel, on which these Terns were feeding. It is a proof of the remarkably keen sight of these birds that from a height in the air they can spy their quarry, not only when it is swimming immediately under the surface of the water, but when the little creatures are crawling or even standing motionless on the bottom, perhaps half buried in the sand with which they almost exactly correspond in colour. I have seen Little Terns, when not engaged in fishing, gather into a small, closely-packed flock, which, after flitting about over the sea, broke up, many of the birds ascending to an immense height until their beautiful white feathers stood out in bold relief against the deep blue sky, while their vibrating pinions glistened like silver as the rays of the summer sun danced upon them. I have seen a couple of immature birds accompany a flock of Sanderlings, skimming over the breakers with rapid beat of wing, returning again to alight at the edge of the tide.

Flight.—The flight resembles that of other Terns. The wide spread of wing and long pointed pinions, give the bird the appearance of being larger than it really is. The same holds good for the Common and Arctic Terns, which, on the wing, appear almost to equal the Black-headed Gull in size.

Voice.—When not annoyed, this species produces a note which sounds as *pīr-rē-pīrrē*. When the nest is too closely approached, and especially when the young are about, a highly-pitched but angry little bark, sounding like *jèp-jèp-jèppā-jèp-jèp*, is uttered.

Food.—Fish are largely consumed, chiefly herring-fry; also shrimps and small crabs. I have seen Little Terns, especially immature birds, foraging with Turnstones under rotting seaweed for sand-hoppers.

Nest.—The nests, of which several in a colony may be in close proximity, are often found on sandy beaches, amid broken shells and bits of seaweed. In some cases but a slight hollow in the bare sand is made to accommodate the eggs; in other cases, I have seen perfect little nests more deeply sculptured, and lined with fragments of broken shells. In many instances I have detected a bare 'girdle' or 'zone' of sand denuded of shells, immediately surrounding the mouth of the nest, from which, in all probability,

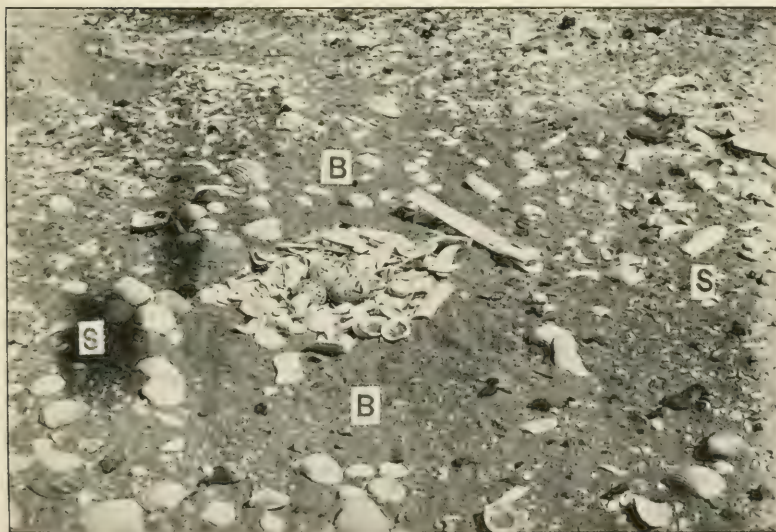


W. D. Latimer, Photo.]

Fig. 1.

NEST AND EGGS OF LITTLE TERN.

B.—‘Bare-zone’ surrounding the nest.
S.—Shells and pebbles outside the ‘Bare-zone.’



G. W. Nicholson, Photo.]

Fig. 2.

NEST AND EGGS OF LITTLE TERN.

B.—‘Bare-zone’ surrounding the nest.
S.—Shells and pebbles outside the ‘Bare-zone.’

the 'lining-shells' had been collected (Plate XL., figs. 1 and 2). But, again, in other situations, in the absence of sand and shells I have found the eggs deposited on gravel and soil, where practically no pretence whatever at the formation of a nest could be made out. The eggs, two to three in number, are of a cold stone-colour, finely or coarsely spotted with ash-grey and brown, and closely harmonising in shade with the sea-sand. They are at times laid in such exposed situations and so close to the tide that, after a severe gale accompanied by heavy rainfall, great numbers of them may be swept away, those that remain often becoming half-buried in the drifting sand. In this state I have found deserted eggs, as late as July 13th.

Incubation commences about the end of May or the beginning of June, but is not general until the middle of the latter month.¹ Colonies composed of limited numbers of these birds breed around the British coast, including marine islands; in the latter situations they consort, to a considerable extent, with Arctic and Common Terns. In some districts the nesting-haunts are widely separated from one another, while along certain coasts three or four colonies may exist within a radius of ten miles.²

Of recent years this species has been recorded as nesting in the Orkneys, and has bred since 1885 or 1886 in the Outer Hebrides, the numbers having greatly increased during recent years (Harvie-Brown).³

Several other islands on the western sea-board of

¹ The following analysis, made of a small colony which, so far as I am aware, was unmolested, helps to bear out this statement:—

June 11th, 1900, I visited a colony containing eighteen nests. Of these—

Eight contained two eggs each;

Four „ three „ „

Six „ one egg „

that is to say, one-third of the total number of nests at that date contained only one egg each, and of the eight containing two in each, the full clutches were not necessarily represented.

² The Little Tern is killed in such numbers and in such a ruthless manner, that I deem it inadvisable to indicate more precisely the position of these localities.

³ Mr. Harvie-Brown obtained two eggs from a colony in the Outer Hebrides in 1900 ('Avifauna Of The Outer Hebrides,' 1888-1902. Ann. Scot. Nat. Hist., 1903, p. 16). In Ann. Scot. Nat. Hist. for October, 1902, p. 197, Mr. T. G. Laidlaw mentions that this species nested in Barra for the first time on record.

Scotland and Ireland accommodate small colonies. The numbers of Little Terns which haunt certain nesting-districts are liable to fluctuate considerably every year.

I am aware of several nesting-sites on the British coast, where during one season the number of birds has been treble that of the preceding year, while in another locality I have known a colony of forty pairs to be represented by only about twelve birds in the two ensuing years, and after that the numbers to rise again to more than sixty birds.

Geographical distribution.—Beyond our Isles the Little Tern is found nesting in Temperate Europe from lat. 60° N. down to the Mediterranean. It also breeds in North Africa, and in Asia as far as India. On migration, it visits the coasts of Southern Africa and Asia.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Forehead, white; top of head and back of neck, black; a broad black stripe extends in front of and behind the eye; back, scapulars, and wings, ‘pearl’ grey; primaries, grey, margined on the inner webs with white; two outer primaries have dark shafts; throat, breast, abdomen, and tail, white.

Adult female nuptial.—Similar to the male plumage, but the outer tail-feathers are shorter than in the male.

Adult winter, male and female.—The black on the head is much duller in colour, and there is more white on the forehead than in the nuptial plumage.

Immature, male and female.—Top of head and back of neck, tinged with pale yellowish-buff and streaked with dark brown; back, scapulars, and wings, grey, tinged with buff and mottled with umber-brown; tail-feathers, greyish-white, slightly spotted with brown near the tips.

The mature plumage is gradually assumed, breeding not taking place until the completion of the third year.

BEAK. Yellow, with dark brown tip.

FEET. Yellow.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	10	in.	Female a little smaller.
WING	...	6.75	„	
BEAK	...	1.5	„	
TARSO-METATARSUS	...	0.75	„	
EGG	...	1.35	× .95 in.	

Allied Species and Representative Forms.—There are several racial representatives of the Little Tern:—*S. sinensis* from the East, is larger and has white shafts to all its primaries. *S. saundersi*, with black shafts, inhabits Africa and India. The North American form, *S. antillarum*, has dark shafts, but has grey on the rump and very little black at the tip of the beak, whereas *S. supercilialis*, found along the east side of South America, and far up the great rivers, has a strongly-built beak, completely yellow in colour (Saunders).

SOOTY TERN. *Sterna fuliginosa* (J. F. Gmelin).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. viii, pl. 587; Lilford, 'Coloured Figures,' vol. vi, pl. 11.

Of the occurrence of this very rare visitor three instances are cited by Mr. Saunders, and since the publication of the second edition of his 'Manual' in 1899, there have been two other records.

In October, 1852, a specimen obtained at Tutbury, near Burton-on-Trent, was exhibited by Yarrell before the Linnean Society in February, 1853.

On June 21st, 1869, another was secured near Wallingford in Berkshire, which was examined in the flesh by Mr. Harting.

On October 4th or 5th, 1885, a third example was caught alive about three miles from Bath, after stormy weather; it was examined in the flesh by the late Rev. Leonard Blomefield.

In the 'Zoologist,' 1902, p. 355, mention is made of a Sooty Tern in adult plumage, which was picked up on October 9th, 1901, in an exhausted state, in Hulme, a densely-populated district of Manchester. The bird soon died and was subsequently set up and exhibited at a meeting of the British Ornithologists' Club on November 20th, by Mr. Saunders (C. Oldham).

In the 'Zoologist,' 1903, p. 393, Mr. W. G. Clarke, of Norwich, writes that a bird found dead on the heath-land between Thetford and Brandon, towards the end of March or beginning of April, 1900, and erroneously supposed to have been a Black Tern, has been identified by him as a

Sooty Tern, and this was subsequently confirmed by Mr. T. Southwell. The bird, an adult, was in good plumage, and has been well preserved. When picked up it was in a very emaciated condition and had evidently died from exhaustion.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Forehead, eye-stripe, sides and front of neck, breast, and abdomen, white; top of head and back of neck, deep black; on either side between the eye and the base of the beak is a black stripe; back, scapulars, and wings, sooty-black; two outer tail-feathers, which are longer than the rest, margined with white on their outer webs.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Resembles the nuptial plumage, but the top and sides of the head are flecked with white.

Immature, male and female.—Throat, breast, and abdomen, sooty-brown; back and wings, darker, with white tips to all the feathers except the primaries.

BEAK. Black.

FEET. Black.

IRIDES. Deep reddish-brown.

EGGS. "Pinkish-cream or bluish-white, with an endless variety of lavender and chestnut-red blotches; the shell being smooth, whereas in the egg of the Noddy—a bird often found breeding in the same localities—the surface is of a rough chalky nature" (Saunders). One egg constitutes the clutch.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	17	in.
WING	...	...	...	11·75	„
BEAK	...	...	...	2·1	„
TARSO-METATARSUS	...	...	...	0·9	„
EGG	...	...	...	2 × 1·5	in.

Allied Species and Representative Forms.—A specimen of the Smaller Sooty Tern (*S. anæsthesia*), an inter-tropical species, supposed to have been taken on one of the lightships at the mouth of the Thames in September, 1875, has

been recorded. From *S. fuliginosa* it may be distinguished by its browner back and wings, longer white stripe over the eye, greyish tint on the neck and less fully webbed feet: the young bird, even as a nestling, has a white breast and abdomen. *S. lunata*, with a slate-grey back, inhabits Oceania (Saunders).

NODDY TERN. *Anous stolidus* (Linnæus).

Coloured Figures.—Lilford, 'Coloured Figures,' vol. vi, pl. 13.

This is another exceedingly rare wanderer from the Tropics and the Southern Seas, which has touched on the British coast on two occasions.

About 1830, two specimens were obtained on the east coast of Ireland between the Tuskar Rock, co. Wexford, and Dublin Bay (Thompson, Nat. Hist. Irel., vol. iii, p. 308).

One of these birds is preserved in the National Museum, Dublin; both specimens were adult. Mr. Ussher states that there is a second Noddy Tern among the Irish birds in the Belfast Museum, without a date, which may be the second bird obtained in 1830.

Sixty-seven years later, a record appeared in the 'Zoologist' for 1897, p. 510, mentioning that a Noddy Tern was said to have been shot about six years previously on the marshes of the Dee.

The singular habit of the Noddies of building a rude nest of large size, composed of dry grass, sticks, sea-wrack, fish-bones, and other materials, on the top of a cocoa-nut or other tree, is worthy of note. In some places, the nests are on shelving rocks beneath overhanging cliffs, and more rarely on patches of sand or grassy slopes.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, 'french' grey; back of neck and throat, greyish-brown; breast and abdomen, dark brown; back and scapulars, sooty-brown; wings still darker; from the eye to the base of the beak there is a black stripe; the tail, unlike that of other Terns, is not forked, the central pair of feathers being the longest, the marginal ones the shortest.

Adult female nuptial.—Very similar to the male plumage, but the back, scapulars, and throat, are browner.

Adult winter, male and female.—Resembles the respective adult nuptial plumages.

Immature, male and female.—Top of head, greyish-brown; back, scapulars, wings, neck, breast, and abdomen, dark brown.

BEAK. Black.

FEET. Reddish - brown; webs, yellowish and fully developed.

IRIDES. Dark brown.

EGG. Reddish-white or yellowish-white in colour, with a few blotches or spots of reddish-brown. The surface of the shell is dull and of a rough texture: only one egg is incubated at a time.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	16 in.
WING	...	...	...	10·5 „
BEAK	...	...	...	2 „
TARSO-METATARSUS	...	...	...	1 „
EGG	..	...	...	2 × 1·4 in.

Family LARIDÆ.

Sub-Family LARINÆ.

SABINE'S GULL. *Xema sabinii* (J. Sabine).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 67; Dresser, 'Birds of Europe,' vol. viii, p. 593; Lilford, 'Coloured Figures,' vol. vi, pl. 14.

Sabine's Gull is a scarce and an irregular visitor to the British Isles. An immature bird, shot in Belfast Bay in September, 1822, and identified by Thompson (Nat. Hist. Irel., vol. iii.), appears to be the earliest recorded British-taken specimen.

Subsequently some ten more examples have been obtained in Ireland; on every occasion in immature plumage.

Seven birds have been recorded from Dublin Bay between the years 1834 and 1884; three from Belfast Lough between the years 1822 and 1867; and one from Donegal Bay, taken on September 19th, 1878 (Ussher, 'Birds of Ireland'). It is very probable that this species has been overlooked in many other localities along the Irish coast.

In England it has been recorded from the following counties:—¹Yorkshire, * Norfolk, Cambridgeshire, Middlesex, Kent, * Sussex, Hants, * Dorset, Devon, Cornwall, * Somerset, Shropshire and Cumberland.

In Wales, Pembrokeshire and Cardiganshire have yielded specimens.

¹ Adult birds, much scarcer in our Isles than those in immature dress, have been obtained from those counties marked with an asterisk (*). Recently—in the autumn of 1903—three adult birds were obtained from the coast of Yorkshire as follows: One, full winter-plumage, September 1st; another, full nuptial plumage (female), September 3rd; both specimens taken at Bridlington (Julian Tuck, 'Zoologist,' 1903, pp. 353, 394). A third, full winter-plumage (female), September 5th; obtained a little south of Scarborough (W. J. Clarke, *loc. cit.*, *ibid.*).

In Scotland, specimens have been taken in Banffshire,* the Isle of Mull, and the Shetlands.

This elegant species can be identified from other small 'hooded' Gulls by its forked tail. Its build is slender, somewhat like that of the Terns with which it often associates, and like these birds, it shows the same fearlessness in the presence of man or dog.

Flight.—Its buoyant, elastic, and remarkably graceful movements on the wing may also be compared to those of the Terns.

Food.—Small fishes form the staple diet, but various other creatures are eaten, such as crabs, shrimps, worms, grubs, and insects.

Voice.—The note is shrill, resembling the syllables *klick, klick, klick*.

Nest.—The nest is a simple structure, composed of dry grasses, rudely matted together. It is generally situated in lacustrine districts, or on swamps adjacent to the sea: the eggs, two in number, and of a greenish-brown ground-colour, blotched with darker shades, are sometimes laid on the bare ground among loose stones, in the vicinity of a Tern-colony.

Geographical distribution.—The breeding-haunts of this Gull are practically circumpolar. In 1818, the late Sir Edward Sabine found it nesting in Western Greenland, in lat. $75^{\circ} 29' N.$, long. $60^{\circ} 9' W.$ On migration in autumn and winter, it travels along the Atlantic sea-board to about lat. $30^{\circ} N.$, while on the Pacific side it can be traced as far south as Peru.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head and upper neck, dull brownish-grey, limited below by a black collar; lower neck, breast, abdomen, and tail, white; back and wings, 'french' grey; secondaries and five inner primaries, almost white; remaining primaries, black, broadly tipped with white.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Top of head, white; back of head, streaked with grey; hind-neck, washed with greyish-black.

Immature, male and female.—Back and wings, greyish

barred with brown and dull white ; tail-feathers, white banded near the tips with blackish-brown.

BEAK. Blackish, with a yellowish tip.

FEET. Pale brownish-grey.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	13	in.
WING	...	...	...	10·75	„
BEAK	...	...	...	1·3	„
TARSO-METATARSUS	...	...	...	1·5	„
EGG	...	...	...	1·7 × 1·3	in.

WEDGE-TAILED GULL. *Rhodostethia rosea* (Macgillivray).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 63 ; Dresser, 'Birds of Europe,' vol. viii, pl. 594 ; Lilford, 'Coloured Figures,' vol. vi, pls. 15, 16.

In December, 1846, or February, 1847, a specimen of this Arctic Gull was said to have been shot near Tadcaster, in Yorkshire. It is now preserved in the Leeds Museum (Saunders). This appears to be the only British-taken specimen as yet on record.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head and neck, white, with a few black feathers near the eye ; narrow black neck-collar ; breast and abdomen, white, tinged in life with a delicate pink ; back and wings, pale 'french' grey ; outer web of first primary, black almost to the tips ; the other primaries, 'french' grey ; secondaries, light greyish, tipped with rosy-white ; tail, which is wedge-shaped, and its upper coverts, delicate rosy-white.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage, except that the black neck-collar is absent, and the rosy tints are more faintly suffused.

Immature, male and female.—Top of head and neck-collar, greyish ; wing-coverts, inner secondaries, and rump,

barred with smoke-brown, the feathers being edged with greyish-buff; three outer primaries, black on both sides of the shaft, fourth to the seventh primaries, greyish-white, barred with black; remaining primaries, white; outer tail-feathers, pure white; remaining ones, white banded at their extremities with dark brown.

BEAK. Black.

FEET. Red.

IRIDES. Dark brown.

EGGS. "Propagation as yet unknown" (H. Saunders, Cat. Birds Brit. Mus., vol. xxv, p. 169).

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	13·5	in.
WING	...	...	...	10·25	„
BEAK	...	...	...	1	„
TARSO-METATARSUS	...	...	...	1·25	„

BONAPARTE'S GULL. *Larus philadelphia* (Ord).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 65; Dresser, 'Birds of Europe,' vol. ix, pl. 717; Lilford, 'Coloured Figures,' vol. vi, pl. 17.

Six examples of this American species have been recorded as visiting the British Isles. The first was taken in Ireland on the River Lagan above Belfast, on February 1st, 1848, and identified by Thompson (Nat. Hist. Irel., vol. iii, p. 317); it proved to be a male in nearly mature winter-plumage, and is now preserved in the Belfast Museum. The second bird was procured in Scotland on Loch Lomond, two years later (April, 1850), by Sir George H. Leith-Buchanan ('Zoologist,' 1851, p. 3117, and 1867, p. 966).

In 1865, two specimens were obtained in England; one in Falmouth Harbour, January 4th (Rodd, 'Zoologist,' 1865, p. 9501); the other at Penryn, on January 10th (Rodd, 'Birds of Cornwall,' p. 168). In November, 1870, an example was obtained at St. Leonards, Sussex (Borrer, 'Birds of Sussex,' p. 262), while the latest occurrence

appears to be that of a bird procured near Penzance, on October 20th, 1890 (Harting, 'Zoologist,' 1891, p. 35).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head and neck, dark plumbeous-black; back, scapulars, and wings, 'pearl' grey; throat, breast, and abdomen, white; first primary, white, tipped and edged on the outer web with black; remaining primaries, barred near their extremities with black, the inner webs being whitish-grey; tail, pure white.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Differs from the nuptial plumage in that the head and neck are white, slightly mottled with grey, especially over the ear-coverts.

Immature, male and female.—Top of head, brownish-grey; back of neck, back, and wings, edged with brown and light buff; scapulars, broadly margined with very light buffish-white; three outer primaries, black on both sides of the shaft; tail, white, with a broad brown band at its terminal portion.

BEAK. Black.

FEET. Orange-red.

IRIDES. Dark brown.

EGGS. Greenish-brown, spotted, streaked, and zoned, with dark brown: clutch, two to three.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	14	in.
WING	...	...	...	10.25	„
BEAK	...	...	...	1.5	„
TARSO-METATARSUS	...	...	...	1.4	„
EGG	...	...	...	1.9	× 1.4 in.

LITTLE GULL. *Larus minutus* (Pallas).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 66; Dresser, 'Birds of Europe,' vol. viii, pls. 599, 599a; Lilford, 'Coloured Figures,' vol. vi, pl. 18; Booth, 'Rough Notes,' vol. iii, pl. 34.

The Little Gull—so named on account of its diminutive size—is of comparatively rare occurrence along our sea-

coasts. It was first described and figured as a British bird by Montagu, early in the last century, previous to the year 1813. Specimens have been obtained from various points along the south and east¹ coasts of England, and less frequently from the opposite shores, including Wales. Occurrences probably take place every autumn and winter, but the numbers fluctuate in a marked degree. Thus in the winters of 1866, 1868, 1869-70, several birds were taken from Norfolk and the adjoining maritime counties.²

The east side of Scotland is more often frequented than the west, but in the vicinity of the Solway Firth this Gull is not of rare occurrence (Macpherson, 'Zoologist,' 1901, p. 285). The Western and Northern groups of Islands are visited at irregular intervals.

This species is a very uncommon visitor to Ireland, occurring chiefly in autumn and winter. Mr. Ussher cites ten records: the earliest is that of a bird shot on the Shannon between King's Co. and Galway, on August 5th, 1840 (Thompson).

On December 6th, 1876, Cox observed one at the mouth of the River Liffey, Dublin; it was feeding in company with other Gulls ('Zoologist,' 1879, p. 486). This appears to be the latest specimen recorded.

Examples have been taken also from Strangford Lough, Belfast Bay, and Lough Foyle ('Birds of Ireland').

Flight.—In its flight the Little Gull rather resembles a Common or an Arctic Tern.

Voice.—The note is sharp and rather harsh; it may be syllabled *krĕk*, *krĕk*, *krĕē*.

Food.—Fish constitute the main diet; aquatic insects are also eaten.

Nest.—The nest is placed near water, on swampy clumps, and is composed of grasses and other vegetable matter.

The eggs, three, more rarely four in number, are greenish-brown, finely flecked and blotched with umber.

¹ Among early records may be mentioned one shot at the mouth of the Tyne in September, 1835 (Bewick).

² Over sixty were killed in Norfolk in 1870 (February), after a heavy gale (Norf. and Nor. Nat. Hist. Soc., vol. iv, p. 410; A. Patterson, 'Zoologist,' 1901, p. 294-95). A specimen was obtained on the Thames at the end of December, 1899, a rather unusual time of year (F. W. Frohawk, 'Zoologist,' 1900, p. 83).

Both sexes take part in the task of incubation.

Geographical distribution.—The breeding-grounds extend over a wide area of Sub-arctic and Temperate Europe east of the Baltic; eastward this bird breeds in Temperate Asia. In winter it migrates to the Mediterranean Basin and to North Africa as far as Egypt.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head and upper neck, black; rest of neck, white; back and wings, ‘french’ grey; primaries, grey, broadly edged with white, darker on their inner webs; axillaries and under wing-coverts, blackish, conspicuous when the bird is flying; tail, white; throat, breast, and abdomen, white, exhibiting a delicate pinkish hue.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Forehead, white; top of head, back of neck, and cheeks, greyish.

Immature, male and female.—Top of head and back of neck, streaked with brownish-grey; back and wings, mottled with dark brown, and edged with buff; tail, banded subterminally with a similar colour; primaries, black, edged internally with white; under wing-coverts and axillaries, white.

BEAK. Lake-red.

FEET. Vermilion-red.

IRIDES. Brownish-black.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	11	in.
WING	...	...	...	8.75	„
BEAK	...	...	...	1.25	„
TARSO-METATARSUS	...	...	...	1	„
EGG	...	...	...	1.65	× 1.1 in.

BLACK-HEADED GULL. *Larus ridibundus* (Linnaeus).

Coloured Figures.—Gould, ‘Birds of Great Britain,’ vol. v, pl. 64; Dresser, ‘Birds of Europe,’ vol. viii, pls. 596, 597, fig. 1; Lilford, ‘Coloured Figures,’ vol. vi, pl. 19; Booth, ‘Rough Notes,’ vol. iii, pls. 35, 36.

This familiar species is widely distributed, not only along the sea-coast of the British Isles, but also, during the breeding-season, in marshy situations, often miles away

from the tide. Considerable numbers in immature plumage remain on the coast throughout the summer: from July onward this Gull becomes exceedingly plentiful, as the parents and young, together with migrants travelling southward, congregate on the muddy slob-lands of our bays and estuaries.

This bird shows a decided preference for low-lying shores and shallows. From the nature of its feeding-grounds it freely consorts with 'waders' of all sizes, Dunlins, Plovers, Curlews, and others, and though squabbling occasionally takes place, the smaller companions remain uninjured.

The Black-headed Gull constantly frequents the estuaries and quays of our city-rivers. Where not molested it becomes wonderfully tame. It little heeds the idle bystander staring at it from over the quay-walls, while on ornamental waters it will take up its abode among the water-fowl, become semi-domesticated, and live parasitically on the food prepared for the rightful feathered owners. Indeed, in severe weather, tame Ducks and Swans often suffer from the deprivation of their food, which the Gulls, assembling in numbers, snatch up and demolish at a surprisingly rapid rate. Recently, about a score of these Gulls have taken up their abode on the ornamental waters of St. Stephen's Green, Dublin (Plate XLI., fig. 2). There I have seen them swim with the tame Ducks, feed with them, and even cautiously drift to the brink of the pond (amid a mixed assembly of water-fowl) to pick up pieces of bread cast within a few feet of where a crowd of people were assembled.

In severe weather these sociable birds will congregate in the small gardens of suburban houses of our sea-port towns; I have seen them crowd round a plate of meal like so many hungry poultry, and almost as unconcerned of human presence. If fed regularly every morning during frost they become remarkably tame. I have kept them in captivity, have tamed them sufficiently to eat from out my hand, and to snap up pieces of meat thrown into the air.

But though greedy, the Black-headed Gull, like other members of its family, is a useful scavenger. Hundreds of these fair-plumed birds may be seen daintily picking their steps, as though mindful not to soil their unsullied plumes, on the black, slimy ooze, bubbling with putrefactive gases emanating from submerged decaying matter. Their white forms float gently on the sluggish tidal river, on water, dark, oily, foul-smelling, and charged with highly



W. D. Latimer, Photo.]

Fig. 1.

BLACK-HEADED GULLS.

A.	B.	C.	D.
Winter plumage (Immature).	Nuptial plumage (Mature).	Autumn plumage (Immature).	Winter plumage (Mature).

Specimens B, C, D, collected and mounted by the late Mr. E. Williams.



E. Williams, Photo.]

Fig. 2.

THE LAKE, ST. STEPHEN'S GREEN, DUBLIN.

Among the pinioned water-fowl are to be seen a number of Black-headed Gulls, in winter plumage, which have taken up their abode on the lake.

poisonous sewage matter. Here they find abundance of food, in the form of floating refuse and offal of every description.

As we watch these interesting birds serving the good purpose of scavengers amid such contaminated environment, we are led to wonder how they preserve so perfectly the purity of their white and delicately-tinted plumes. The adaptability of this species to its varied surroundings, and its confidence in the presence of man, at once make it one of the most interesting and companionable of sea-birds. Throughout the autumn and winter months it swarms on many parts of our shores; not being a pelagic species, it seldom wanders far from the coast-line.

In cold weather numbers flock to the fields and fallows; hundreds may be seen following closely behind the plough, and they are remarkably astute in distinguishing the friendly ploughman, in whom they place the utmost confidence, from the lurking gunner whom they keep at a civil distance. I have observed these clever birds taking wing the moment I entered a field with a gun under my arm, though they had been searching for worms almost at the feet of a ploughman for a considerable time before.

With the subsidence of a severe frost, Black-headed Gulls visit the flooded fields to devour the drowning earth-worms which have reached the surface as the soil softened.¹ Indeed, during the first few days of an active thaw, the sea-shore in certain districts may be seen quite deserted. In the evening the birds return to the coast to rest.

Flight. — The flight is buoyant, graceful, and well-sustained, and at times the aerial movements are of a highly interesting character. Now swooping, now gliding up and down with wide expanse of wing, until suddenly attracted by a dainty morsel of floating refuse, first one, then the entire flock hasten to the spot, and with fluttering wings, and feet almost treading on the surface of the water, each member endeavours in turn to bear off the prize, until swiftly pursued by its companions, it is obliged to let it go. The excitement begins afresh as the birds, with clamouring voices, make frantic efforts to secure the quarry. Finally, a Herring-Gull, or perhaps a Black-backed Gull, attracted to the scene of the disturbance, settles the matter by descending to the water and engulf-

¹ A habit indulged in by other species of Gulls.

ing the envied tit-bit, too cumbersome for the smaller birds to secure.

Food.—Like other Gulls, this species will eat almost anything. It paces the sea-shore and shallow channels for small fishes, crabs, shrimps, and shell-fish, and has a most interesting habit (which seems to have been overlooked by most observers) '*pool dancing*,' if one might adopt the term. It is this: a Black-headed Gull wades into a little pool, the water of which is only deep enough to cover part of its feet; it then lowers its head and looks at the bottom. Finding no food, it at once commences to prance up and down on the sandy floor, stirring up the sediment out of which it picks various marine creatures and fragments of seaweeds. I have seen many of these birds at this performance along the mud-flats of Dublin Bay, and have also noticed parties pattering along the dry sands in pursuit of sand-hoppers, or snapping at flies as they swarmed on decaying animal or vegetable matter. Reference has already been made as to the manner in which floating refuse is greedily snatched up. Away from the tide, beetles, worms, and grubs, are consumed: in the dusk of a summer's evening a novice might mistake this Gull for a Barn-Owl, as he watched it hawking for cock-chafers and moths over corn-fields and ditches with rapid and twisting flight. In hard weather Lapwings are often troubled by this species, as it pursues and bullies them to such an extent that they are obliged to forfeit their hard-sought-for worms. In captivity Black-headed Gulls are practically omnivorous. One, of which I made a great pet, and had for many years, used to swallow small mice entire, and such diet was greatly relished.

Voice.—The term 'Laughing Gull' has been applied to this species on account of its peculiar voice, which is supposed to resemble a laugh. Of this it is a very feeble mimicry, if at all. There is nothing bright or merry about the sound; it is irritably harsh and scolding. If the comparisons are at all befitting, the cry may be likened to that of a cross-tempered two-years-old child, who passionately ejaculates with wide open mouth, the syllables *yāāh-hāā*, *yāāh-hā*, *yāāh-wāw*. The immature birds¹ which assemble

¹ It is interesting to note that when the young first come down to the tide towards the end of June and during July, the full clutch of two or three birds seldom accompany the parents on the wing. I have



NEST AND EGGS OF BLACK-HEADED GULL.

The nest is built on a tuft of rushes surrounded by shallow
water and quagmire.



Fig. 1.—Nest containing one downy young bird just hatched out, and an egg in which the beak of a nestling is protruding through a crack.



Fig. 2.—NESTS OF BLACK-HEADED GULL.
Nest containing three downy young birds, two days old.

in the early autumn on the slob-lands may be heard uttering a high, thin, one-syllabled note varied with a rather faint 'brassy' squeak. The chorus produced by hundreds, as an intruder approaches the breeding-haunts, is truly bewildering.

Nest.—Black-headed Gulls are highly gregarious during the breeding-season, assembling at their gulleries towards the end of February. The breeding-sites are very diversified. Marshy situations, such as exist along the shores and islands of inland lakes, or flat and open bog-lands, are the usual localities selected. Less frequently marine islands, more or less clad with vegetation, are resorted to, where colonies of this and other sea-birds often exist in close proximity. Sometimes the nests are placed on little mounds amid rushes, surrounded by soft muddy soil, or even by water (Plate XLII.). Others are found in drier situations amid flags, nettles, fallen leaves, and bits of dead sticks (Plate XLIII., figs. 1, 2, and Plate XLIV.). I have found the nest built into a hollow in the grass, the site resembling that chosen by a Lark or Meadow-Pipit. In addition, nests have been found built on an ancient fort, on isolated rocks in lakes, on the tops of stone beacons, and within a walled hiding-place (Ussher). The nest itself is composed of sedges, grasses, and bits of the surrounding materials. Three eggs constitute the normal clutch, though I have found four and even five in one nest.¹ The ground-colour and the darker markings of the eggs vary to a considerable extent. Some are brownish-green, others light bluish or yellowish-pink, heavily blotched with chocolate-brown. Less frequently they are of a uniform ground-colour. This is seen in Plate XLIV., which is a photograph of a nest containing four dull bluish-white eggs, which, from their extreme similarity in size and colour were very likely the property of a single bird.

Incubation commences about the end of April or the beginning of May; three weeks later the young are hatched,

generally noticed one adult and one young bird together. The same habit applies to other Gulls, a single immature Herring-Gull usually following an adult. Whether the adult is the rightful parent or not, it is hard to say.

¹ On one occasion I found a nest containing five eggs, three of which were heavily blotched with brown, the remaining two being of a uniform olive-brown colour. The nest most likely contained two clutches.

clothed in a richly variegated yellowish-brown down (Plate XLIII., figs. 1 and 2).

Many gulleries are protected, and the eggs are collected for culinary purposes, the birds continuing to lay after their clutches have been repeatedly removed.

Black-headed Gulls, like other creatures living together in large and densely-thronged communities,¹ often enter into combat, severely pecking and even killing one another to secure the most favourable nesting-sites. The young are often knocked out of their nests, and many of them, when creeping about in search of hiding-places, are destroyed by rats and other enemies.

Rooks, Daws, Black-backed Gulls, and Hawks, are vigorously assailed and even killed by the members of a gullery, and I have several times found dead Jackdaws and Rooks, especially when the gulleries were in well-wooded districts. In such places the Gulls may be seen alighting on the branches of trees.

There are many gulleries in the eastern and southern maritime counties of England, the most westerly of which is in Poole in Dorset. Some of the inland counties, certain districts in Wales, and Walney Island off Lancashire, also harbour colonies.

Great assemblages exist in Scotland, notably at Wigtown, Lanark, Loch Lomond, Moray Firth, and northward to the Shetlands.

This Gull is an abundant breeding-species in Ireland, and maritime and inland counties are both visited; in fact, the great central plain accommodates vast numbers.

Among marine stations may be mentioned the Blasket Islands, the most westerly land in Europe, or, as the Islanders put it to me, when I visited them, "The nearest land to America!"

Many former gulleries have now ceased to exist in the British Isles, while others have newly sprung up. For as man from time to time appropriated their breeding-grounds for building or cultivating purposes, the birds *en masse* simply changed their quarters, and so their numbers are not decreasing.

¹ In densely-populated gulleries it is most difficult to avoid treading on the eggs and fledglings, and in taking photographs one has to be careful first to inspect the surroundings, lest the diverging legs of the camera be thrust into and damage the contents of adjoining nests, while the operator manipulates his instrument under cover of his focussing cloth.



NEST OF BLACK-HEADED GULL.

Nest containing four bluish-white eggs.

Geographical distribution.—Abroad, the Black-headed Gull breeds over the greater part of the European Continent, from about lat. 65° N. in Norway and Sweden, and from Archangel in Russia southward to the Mediterranean. Eastward it can be traced over Temperate Asia, as a nesting-species to Kamtschatka. On its autumn and winter migration it reaches North Africa, Tropical Asia (including India and China), the Philippines and Japan.

DESCRIPTIVE CHARACTERS.

PLUMAGE.¹ *Adult male nuptial.*—Head and upper neck, dark brown (not black as the bird's name implies); back and wings, 'french' grey; outer primaries, chiefly white, with black tips and blackish bands along the inner webs; inner primaries, chiefly 'french' grey tipped with black; secondaries, pale 'pearl' grey; rest of plumage including tail, white, the breast being suffused with a very delicate evanescent pink.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—The dark coloration of the head (hood) is replaced by white in the early autumn, but the head never gets completely white, a few black patches remaining about the regions of the eye and the ear.

Immature, male and female.—The wings and back are splashed with warm chestnut-brown, which extends for some distance up the back of the neck²; much of this colour disappears during the first autumn, but the wing-coverts remain dappled, and the tail banded with brown

¹ I have obtained specimens which were only beginning to lose their 'hoods' in the middle of November, and others which had assumed their new nuptial hood-feathers in December and January. I have notes of sickly birds and those subjected to captivity which moulted from summer to winter-plumage rather slowly. On December 16th I picked up a freshly-killed specimen on the Dublin coast in a very emaciated condition; it was just beginning to shed its dark hood-feathers. But early February is the usual time at which the 'hood' is assumed, and this plumage is retained until about the middle of July. By August most of the birds have changed into winter-garb. Immature birds do not assume the 'hood' in their first spring until March or April, and in some cases not until the following spring.

² Some young birds lose the chestnut-brown on the back and neck much earlier than others. On July 27th, 1900, I examined a specimen which had lost much of this coloration, whereas on October 23rd, I obtained a bird still retaining all the immature markings.

throughout the first year. The outer primaries are chiefly dark brownish-black, but they soon become streaked with white along the middle of the inner webs.

BEAK. Deep carmine.

FEET. Deep carmine.

IRIDES. Very dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	16	in.
WING	...	...	...	11.75	„
BEAK	...	...	...	1.75	„
TARSO-METATARSUS	...	...	...	1.76	„
EGG	...	...	...	2.2 × 1.5	in.

Allied Species and Representative Forms.—The South-eastern representative is *L. brunneicephalus*, a bird with a paler brown head and different wing-pattern.

MEDITERRANEAN BLACK-HEADED GULL.

Larus melanocephalus (Natterer).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. viii, pl. 597, fig. 2; Lilford, 'Coloured Figures,' vol. vi, pl. 20.

There appear to be but two records of the occurrence of this extremely rare visitor to our shores.

One, that of an adult in winter-plumage, shot on Breydon Broad, Norfolk, received by Mr. G. Smith, of Great Yarmouth, on December 26th, 1886; this, the first well-authenticated specimen procured in the British Isles, was exhibited by Mr. Saunders at a meeting of the Zoological Society of London, on January 18th, 1887.

The second, that of an immature bird, said to have been obtained near Barking Creek, on the Thames, in January, 1866, identified by Mr. Saunders in 1871, and now in the British Museum.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, black, with a small white patch above the eye and another below; back and wings, 'pearl' grey; primaries, white towards their tips, tinged with light 'french' grey above; there is a narrow streak of black along the outer web of the first primary; neck, breast, abdomen, and tail, white.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Differs from the nuptial plumage in that the head is white, streaked with greyish-brown and black, chiefly about the eye and the ear-coverts.

Immature, male and female.—Head, streaked with dark greyish-brown; wing-coverts and scapulars, mottled with dark brown; tail, white, banded towards the extremity with dark brown.

"Birds which have assumed the black hood for the first time exhibit black streaks next the shafts of the primaries 1—3 and black bars on 1—5, until the following moult" (Saunders).

BEAK. Red, with a darkish band in front of the angle; strongly built.

FEET. Red.

IRIDES. Dark brown.

EGGS. Dull white shading to cream, blotched and streaked with dark brown: clutch, two to three.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	15.5 in.
WING	...	...	...	11.75 „
BEAK	...	...	...	1.75 „
TARSO-METATARSUS	...	...	...	1.9 „
EGG	...	...	...	2.2 × 1.4 in.

GREAT BLACK-HEADED GULL. *Larus ichthyæctus* (Pallas).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. viii, pl. 598;
Lilford, 'Coloured Figures,' vol. vi, pl. 21.

There appears to be but one British record of this South-eastern species, the largest of the 'hooded' Gulls.

About the end of May or early in June, 1859, an adult, in nuptial plumage, was shot off Exmouth when associating with a flock of Black-headed Gulls. The bird is preserved in the Exeter Museum (Ross., Ann. & Mag. Nat. Hist., 1859, p. 467).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, jet-black; small white crescentic patch above the eye and another below; back and wings, darker ‘pearl’ grey than in *L. ridibundus*; secondaries, broadly margined with white, forming a conspicuous wing-bar; primaries, chiefly whitish, the first six being barred with black; neck, breast, abdomen, and tail, pure white.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Resembles the nuptial plumage, except that the head is streaked with brownish-black.

Immature, male and female.—Head, sides of neck, back, and wings, mottled with brown; primaries, brown; secondaries, brown, broadly edged with white, and bordered with white along the outer webs; tail, white, banded on its terminal portion with blackish-brown.

Nestling.—Greyish-white.

BEAK. Deep yellowish-red at the angle, and banded with black.

FEET. Olive colour; webs, orange.

IRIDES. Very dark brown.

EGGS. Yellowish-stone colour with large streaks and blotches of brown and black: clutch, three.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	26	in.	Female smaller.
WING	...	...	19	„	
BEAK	...	...	3.25	„	
TARSO-METATARSUS	...	...	3.3	„	
EGG	...	...	2.95	×	2 in.

COMMON GULL. *Larus canus* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 60; Dresser, 'Birds of Europe,' vol. viii, pl. 600; Lilford, 'Coloured Figures,' vol. vi, pl. 22.

This species, plentiful in autumn and winter on our shores, is somewhat larger, stouter, and less elegant in build, than the Black-headed Gull, from which it may also be distinguished easily by its bright green legs.

In summer, when the dark hood of the smaller species is assumed, the two birds are unmistakable. Yet in many localities, the Black-headed Gull, owing to its abundance at all times of the year, is popularly known as the 'Common Gull.'



FIG. 54.—COMMON GULL.

In their nuptial plumages the Kittiwake and the Common Gull are much alike. Both have pure white heads, and rather dark 'french' grey backs, but they differ in the colour of the feet¹ and in the markings of the primaries.

In spring most adult Common Gulls pass northward,

¹ It is well for a novice to observe accurately the great variety in the colour of Gulls' feet. In the few species that are common along our coasts we notice such contrasts as red, green, pink, yellow, and black.

though in certain districts in our Isles considerable numbers remain to breed.

Immature birds, with bluish-grey backs, brown dappled wings and banded tails, may be seen scattered over the sandy coasts throughout the summer months: from July onward this Gull becomes much more abundant as the migrants with their families return to the coast. Though preferring the shelter of estuaries and harbours to the wide open sea, yet this species, as a rule, keeps at a fair distance from human habitations and crowded thoroughfares; thus it is not generally seen feeding on refuse along city-quays and wharfs, though, in great stress of weather, it will visit our lawns¹ and gardens. Here, associating with the more domesticated Black-headed Gull, it partly forgets its natural shyness, and driven by hunger becomes quite audacious, especially if fed regularly during frost. Like the Black-headed Gull, it follows the plough, sometimes in very large numbers,² in search of worms and grubs. Nowhere do the beautiful plumes of this bird stand out in such bold relief as against the dark upturned sods.

Flight.—The flight of this and other Gulls is familiar. The bird moves leisurely through the air, its wings gently flapping up and down without the least apparent muscular effort. But when necessity arises, as when chased by its tormentor the Skua, it can cleave through the air and twist and turn with extraordinary skill.³ On flat, sandy shores laid bare at ebb-tide, multitudes may be seen in the distance like white flecks coursing over the fringe of the breakers in company with Herring-Gulls, Oyster-Catchers and other coast-birds.

Food.—Fish, crabs, marine insects, and shell-fish, form a large portion of the diet, but stranded or floating carrion

¹ Like the preceding species, at times it alights on trees.

² On the Dingle Peninsula, not far from the Basket Islands, where there is a breeding-colony, I observed, on April 1st, 1901, an immense flock of immature and adult birds closely following a plough and greedily devouring the upturned worms. The Gulls were so thickly clustered that occasionally they trampled on one another when rushing to secure food. They were so intent on satiating their appetites that they little heeded a large Collie-dog which was careering wildly over the field.

³ It may be said that the Gull among Sea-Birds and the Rook among Land-Birds, fly in a lazy and sedate manner. But at times their gyrations, either when sporting, or when evading the dreaded swoop of the Falcon, are truly surprising.

is not by any means refused, while worms and grubs are obtained in the fields. In captivity the bird will eat practically anything.

Voice.—The voice is much less wailing than that of most other Gulls. The note is short, sharp, one-syllabled, and sounds like *yak-yak*, or *yak-kak*.

Nest.—The Common Gull is gregarious in the nesting-season, and some colonies are composed of considerable numbers.¹ In many localities the nests are placed apart from those of other sea-fowl.

In July, 1898, I found three nests on a small island in a fresh-water lake near Castlebar, co. Mayo. The materials used for building were for the most part withered grasses, and the nests were rather conspicuous, being situated among the tops of bare rocks. Sometimes the birds build among loose stones along the fringe of islands, or amid heather or grass on the slopes of sea-cliffs. In maritime situations seaweed is often added as a building constituent.

The eggs, normally three to the clutch, vary in ground-colour from greenish-brown to light straw, some being of a rather pale bluish shade: they are blotched and streaked with brownish-black.

Incubation begins about the month of May. In certain districts the eggs are collected for culinary purposes.

Along the coast and lochs of the northern section of Scotland (including the Western Island-Groups, the Orkneys, and Shetlands), this Gull nests in no small numbers.

In Ireland, the breeding-haunts seem limited to the counties of Sligo (where Mr. Warren found the bird nesting in 1855), Mayo, Galway, Donegal, and Kerry. In addition, there are marine settlements on a few islands off the west coast.

Geographical distribution.—Abroad, the Common Gull is plentifully distributed in the breeding-season in Northern and Central Russia, Scandinavia, and other parts of Europe, but is rare in Iceland. In autumn and winter it migrates over the European Continent, crossing the Mediterranean to North Africa, and eastward to the Temperate regions of Western Asia.

¹ Mr. Ussher mentions a maritime breeding-haunt, numbering about a hundred nests, on the north coast of Donegal. Among the breeding-resorts which I have had occasion to visit, that on the Blasket Island is particularly interesting owing to its isolated position, and from the fact that it is the most southern in Europe.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, neck, breast, abdomen, and tail, white; back and wings, dark ‘french’ grey or lavender colour, deeper in shade than the same regions of several other species of Gulls; secondaries, broadly tipped with white; two outer pairs of primaries, chiefly dull black, with grey basal portions, and with large white ‘eyes’ near the tips; rest of primaries, chiefly pale grey, barred below with black, and all except the first broadly tipped with white.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Differs from the nuptial plumage in that the head and upper neck are streaked and spotted with greyish-brown.¹

Immature, male and female.—Before August the upper parts of the immature birds are dusky-brown, with dull buff edges to the feathers; throat, breast, and abdomen, impure white, with brownish feathers interspersed; tail, dull white, broadly banded subterminally with brown; upper tail-coverts, white, thinly interspersed with brown; primaries, brown.² The lavender-coloured feathers of the back appear early in the first autumn, but the wing-coverts retain their immature brownish coloration and the tail is banded until the next autumn moult. The pure white head is apparently not assumed until all signs of immature plumage have disappeared.

BEAK. Green, tipped with yellow.

FEET. Yellowish-green.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH ...	...	...	17·5 in.
WING ...	...	...	14·5 „
BEAK ...	...	...	1·85 „
TARSO-METATARSUS ...	...	...	2·25 „
EGG ...	...	...	2·25 × 1·5 in.

¹ I have seen and examined in the flesh many Common Gulls in full winter-plumage as early as August 6th.

² Birds in this plumage are far from common along our coasts, except near their breeding-colonies.

Allied Species and Representative Forms.—The Eastern form of the Common Gull is larger and possesses a darker mantle. *L. delawarensis*, also a larger bird, but with a paler mantle and doubly-zoned beak, inhabits the North American Continent, while *L. brachyrhynchus* is a smaller bird, which is found from the Pacific to the Great Bear Lake. It is noteworthy that an immature example of *L. canus* was secured in Labrador on August 21st, 1860 (Saunders).

HERRING-GULL. *Larus argentatus* (J. F. Gmelin).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 59; Dresser, 'Birds of Europe,' vol. viii, pl. 602, fig. 1; Lilford, 'Coloured Figures,' vol. vi, pl. 23.

The Herring-Gull, one of the large indigenous species, is abundant on our coasts throughout the year. Even in the breeding-season, when the adults have congregated about the headlands and precipitous islands, hundreds of immature birds¹ continue to frequent the ooze-flats and sandy beaches. Indeed, during the late spring months, no Gull is more familiar, or forms a more prominent feature on the sluggish waters of the city-estuaries and quays than the large 'tweed-plumed' immature Herring-Gull. Here, depending largely for its sustenance on floating refuse, it appears quite indifferent to the shipping traffic of busy ports and harbours. It may be seen perched on cargo-sheds, on chimney-pots, and on roofs of factories, on the gunwales and riggings of boats, and on the summits of monumental figures.²

It follows the cross-channel steamers and trawlers from port to port in search of food, and shows little if any alarm,

¹ The Herring-Gull takes several years to reach maturity; hence the vast numbers of non-breeding birds, seen in various phases of plumage, all the year round on low-lying as well as on precipitous coasts.

² Pinnacles of all kinds seem to offer a special attraction to the Herring-Gull. Even in their breeding-haunts some may be seen alighting on the summit of a great pointed rock, from which lofty eminence they shower down, in 'Gull-language,' their menacing threats upon the intruder.

at the shrill whistle and vibrations of the 'syren' and fog-horn.

Though often wandering far up rivers in search of offal, and assembling betimes in small numbers on pasturage at no great distance from the coast, yet it is essentially marine, and records from inland situations may be regarded as exceptional. It has been observed in autumn and winter on Lough Neagh (Ussher).

Flight.—The sustaining power and buoyancy of the Herring-Gull on the wing are remarkable. With wide, outspread, and almost motionless pinions, it appears to sail into the teeth of the tempest and then float against the wind with a calm but progressive flight.

"White bird of the tempest—Oh! beautiful thing—
With the bosom of snow and the motionless wing;
Now silently poised o'er the war of the main,
Like the spirit of charity brooding o'er pain."

When following in the wake of a steamer which is speeding at twenty miles an hour, this hardy sea-bird appears to travel with the utmost degree of leisure and practically without flapping its wings. Albeit, it can move with great speed; more so than its gentle flight would lead us to suppose.¹

This may be witnessed when food is cast overboard and a group of these birds tarry on the water to devour it. They are soon left behind, appearing as white dots in the distance. Yet almost in a moment by a few beats of their powerful pinions, they are again floating o'erhead at the stern of the vessel. No less wonderful is the evading arrow-like swoop so admirably displayed when they pursue, or are being pursued.

With the Eagle the Herring-Gull can almost vie in its soaring-powers, reaching such heights as to appear an indistinct white moving speck.

Food.—This species is practically omnivorous. Its food is largely obtained along the coast, where the bird may be seen walking with cautious tread over seaweed-covered stones, seeking out the hiding-places of crabs, sea-worms,

¹ On January 20th, 1903, as I was crossing the Irish Channel from Dublin to Holyhead, I timed the stroke of the pinion in the case of fifteen different Herring-Gulls in various stages of maturity, from a flock of thirty which followed astern of the steamer. During quiet flight, the weather being calm, I determined that the average number of strokes per minute amounted to 160, or a little less than three per second.

and shell-fish. The method frequently adopted for obtaining a meal of cockles, mussels, whelks, and other molluscs, is singularly interesting. Unable to pierce the shell, it holds it in its beak, and ascends into the air to a height of about fifty yards. The prey is then suddenly released, the bird swooping after it so swiftly, that it is snatched up the very instant it touches the ground. If the shell be not broken the performance is repeated, but as it is generally dropped on a stony beach the contents are secured after one or two trials. For many years I have witnessed this habit of the Herring-Gull along the shores of Dublin Bay; I have seen a line of a dozen or more of these birds stationed at regular intervals of about a hundred yards from one another, all busily 'shell dropping.'

Mr. A. Williams writes me that he once saw a Herring-Gull capture a rat on the shore, carry it off by the tail and drop it from such a height on to rocks that it was disabled, easily secured, and torn to pieces.

Immense shoals of Herring- and other fry are rapidly thinned out, as bird after bird, attracted by the screeches of their comrades, flock to the spot, and with all haste swoop to the water, demolishing hundreds of their silvery prey in a very short time. The fields are also visited, the plough is followed, and grubs, worms, and grain,¹ are eaten. Offal, including carrion, is as dainty diet to this voracious bird. Like other large Gulls its predatory habits render it an enemy to the smaller land-birds, which, as they flit over the sea, often partially exhausted from migration, are captured and engulfed, feathers and all.

Again, fledglings, baby-rabbits, and the eggs of other sea-fowl are habitually carried off and devoured in large numbers by this thieving bird.

Voice.—The two-syllabled wailing note is heard for the most part from the cliffs during the nesting-season, but the birds are also noisy when competing with one another for offal or living fish in the water. The voice, when first sounded, is prolonged and mournful, but when oft repeated it becomes shorter and sharper. Thus the note of an angry

¹ Mr. A. Williams has observed Herring-Gulls "engaged in tearing off the grains of ripe oats from the stalks, and eagerly devouring them." On examining the ejected pellets he found them to be composed of "the broken-up outer covering of oat grains, closely packed together" ('Irish Naturalist,' 1905, p. 71).

Herring-Gull begins like *ĕĕ-āw*, *ĕĕ-āw*, and presently changes into *ĕā-ĕā-ĕā-ĕā*, or *clĕĕ-ō*, *clĕĕ-ō*, *clĕā-clĕā-ĕā-ĕā-ĕā-ĕā*. The immature birds utter a prolonged squeak.

Nest.—This is one of the most abundant and widely-distributed breeding-species round the British coast. It assembles in great colonies, but the nests, as a rule, are not in very close proximity, like those of Black-headed or Kittiwake Gulls. The breeding-haunts are on rocky and broken ground, in situations difficult of access, as where a talus occurs midway up the sea-cliffs, or on the sides and tops of precipitous marine islands, but less frequently on narrow ledges; a very minor number of birds select inland marshes, while abroad they have been found building in trees. The nests are usually surrounded by scanty vegetation, such as grasses and tufts of thrift, which are also utilised as building-materials. The eggs, normally three in number, vary in ground-colour from olive to yellowish-brown, sometimes to greenish-blue, and are blotched with dark brown. Incubation begins about the middle of May.

The young, while still in the downy stage, quit their nests and seek shelter among crevices and herbage.

Geographical distribution.—Abroad, the Herring-Gull is widely distributed in the breeding-season over Temperate and Northern Europe to the west of the White Sea, also over North America from the Arctic Regions to lat. 40° N. In autumn and winter it can be traced along the western sea-board of Europe down to the Mediterranean; eastward, to the Black and Caspian Seas. Along the American coasts it migrates as far south as the Bermudas on the Atlantic side, and California on the Pacific side.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.¹—Head, neck, breast, abdomen, and tail, white; back and wings, pale ‘french’ grey; scapulars and secondaries, broadly tipped with white; outer primaries, chiefly black with white tips, large white ‘eyes,’ and pale grey inner webs; other primaries, chiefly grey with white tips.

Adult female nuptial.—Similar in plumage to the male.

¹ I have seen Herring-Gulls in captivity retain their adult nuptial dress throughout the entire winter.

Adult winter, male and female.—Differs from the nuptial plumage in that the head and neck are streaked with grey.

Immature, male and female.—The plumage of the young bird is profusely chequered above and below with greyish-brown; primaries, brown, with paler inner webs and whitish tips; tail, greyish-white, broadly banded with brown. The chequered markings are retained until the beginning of the third autumn; they are then replaced on the back and scapulars by 'pearl' grey feathers corresponding in colour with those of the mature birds; the wing-coverts, head, neck, and breast, remain dappled and the tail banded for a longer period, maturity being gradually attained, and not completed until the fifth year.

BEAK. Yellow, red at the angle.

FEET. Flesh-colour.

IRIDES. Bright yellow; margin of eyelids, pale yellow.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	24	in.	Female smaller.
WING	...	...	17.5	„	
BEAK	...	...	3	„	
TARSO-METATARSUS	...	...	2.5	„	
EGG	...	...	2.9	×	1.95 in.

YELLOW-LEGGED HERRING-GULL. *Larus cachinnans* (Pallas).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. viii, pl. 602, fig. 2.

This is a south-eastern species which, on one occasion, has been recorded from the British Isles. On November 4th, 1886, a specimen was obtained on Breydon Water, Norfolk. It was examined by Mr. Saunders, and is now in the collection of Mr. Connop, of Rollesby Hall, Great Yarmouth (Saunders, *Man. Brit. Birds*, 2nd Edition, p. 674).

DESCRIPTIVE CHARACTERS.¹

PLUMAGE. *Adult male nuptial.*—Resembles the nuptial plumage of the Herring-Gull, except that the back and

¹ *Vide* Cat. Birds Brit. Mus., vol. xxv, p. 268.

wings are darker, and the black and grey on the primaries show a deeper shade.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage, with perhaps the very faintest indications of grey streaks about the head and neck. In this respect it differs from the adult winter-plumage of the Herring-Gull.

Immature, male and female.—Resembles the immature plumage of the Herring-Gull.

BEAK. Yellow, red at the angle; the colours being much brighter than those of the Herring-Gull.

FEET. Brilliant yellow.

IRIDES. Bright yellow; margin of eyelids, bright orange-red.

EGGS. Resemble those of the Herring-Gull.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	23	in.
WING	...	...	...	18	„
BEAK	...	...	...	2.95	„
TARSO-METATARSUS	...	...	...	2.75	„

Allied Species and Representative Forms.—*L. vegæ*, from the East coast of Siberia, wintering in Japan and China, is grey on the back and wings, but darker in shade than either of the above Herring-Gulls. Its feet are flesh-colour.

LESSER BLACK-BACKED GULL. *Larus fuscus* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 56; Dresser, 'Birds of Europe,' vol. viii, pl. 603; Lilford, 'Coloured Figures,' vol. vi, pl. 24.

The Lesser Black-backed Gull, slightly smaller than the Herring-Gull, and of similar build, is easily distinguished in its mature plumage by its dark bluish-black wings and back. From the great Black-backed Gull it can be identified by its much smaller size. It is in no wise as abundant on our shores as the Herring-Gull, and though resident in some

districts is distinctly migratory in others. On the Dublin coast it is very uncommon between November and February, and for many seasons I have not seen more than a few stragglers remain throughout the winter.

The habits of this and the preceding species are much alike, but the Lesser Black-backed Gull is not so gregarious nor so purely maritime. Thus both may be noted following up sprats on the open sea, seeking the shelter of bays and harbours, visiting tidal rivers in search of offal, or foraging on rocky and flat portions of the coast. But, in addition, the Lesser Black-backed Gull will often wander inland for many miles. I have seen it flying along canals twenty miles from the sea, generally singly or in parties of two or three.

In March, numbers appear on city-rivers, and many of them pass inland beyond the quays. Accustomed to the more gentle-tinted plumes of the adult Herring-Gulls, which are never absent from our rivers, wharves, and quays, our attention is at once arrested by the strong contrast colours of the Lesser Black-backed Gull. And as each succeeding spring returns with its warm gleams of sunshine, we welcome the arrival of this splendid bird. Unfortunately, it is not a general favourite; on moors and such localities where game is preserved it has to be kept in constant check by the keepers, as it is a marauder, and the safety of eggs or nestlings cannot be assured as long as it lurks about.

Away from its breeding-haunts, this bird sometimes collects into small parties; in the months of July and August I have seen as many as thirty together in various plumages, walking over the ooze-flats of Dublin Bay. But though not very gregarious it is decidedly sociable, and will alight and feed among flocks of shore-birds, including the smaller 'waders.' Like the Herring-Gull, it will follow steamers in search of food, apparently all through the night. Thus on August 1st, 1900, I travelled from Dublin to Glasgow. The boat steamed off at about 6 p.m., and while still in the River Liffey some twenty Herring-Gulls and three Lesser Black-backed Gulls followed astern. As we got out to sea several Kittiwakes accompanied us. I was much interested in the movements of one of the Lesser Black-backed Gulls in partial immature plumage,¹ and with a disabled leg which

¹ This Gull was apparently entering on its third year's winter-plumage; the tail was white but broadly banded and spotted with

hung down as if broken. The bird was not at all shy, and swooped to the water directly I cast bread overboard. I continued my observations until dark, retiring to my cabin a little after ten o'clock. On reaching the deck next morning the first bird that caught my eye as we steamed up the Clyde to Greenock was a Lesser Black-backed Gull, with a hanging leg, and in similar plumage to the bird which left Dublin Bay the night before and accompanied the vessel out to sea. It was doubtless the same bird.

Flight.—The flight is buoyant and well sustained, and this Gull, like its congeners, can keep on the wing for hours during fierce gales.

Food.—Most of the remarks which apply to the feeding-habits of the Herring-Gull are also applicable to this voracious bird, though I cannot be certain that I have seen the Lesser Black-backed Gull drop molluscs from a height to break their shells. Harbours and city-rivers, even those far from the sea, are mainly visited for the purpose of securing the much-relished floating offal. Small Gulls are sometimes chased until they disgorge their food, which is at once seized and eaten by these larger assailants. Indigestible pellets of this and of other large Gulls are often found to contain feathers, fur (chiefly that of young rabbits), and bones.

Voice.—The alarm-note is not unlike that of the Herring-Gull, but fuller and less piercing. When first disturbed the bird utters a mournful *gāl-āu*, *gāl-āu*, *gāl-āu*; after much repetition this shortens into *ālāu*, *ālāu*, *ālā*, *ālā*, *ālā*. The young bird squeaks in a highly-pitched key.

Nest.—In its nesting-habits this bird differs somewhat from the Herring-Gull. For the former is almost as partial to inland situations, such as moors, marshes, the shores and islands of inland lakes, as to the coast. But, like the Herring-Gull, it frequently selects precipitous situations on sea-cliffs, though its colonies usually consist of small numbers. It also breeds on low, maritime islands, usually luxuriant in grasses and other herbage, though bare stony sites may be chosen.

The nests vary considerably in size; some are mere depressions scantily lined with grasses, others are large and compact, being built of turf-mound, heather-twigs, and sea-plants, with a lining of fine dry grass.

brown, the breast and throat turning white with some grey spots still visible; the wings brownish-black, the head streaked with grey.

The eggs, three in number, vary from a bluish to a brownish-green shade, blotched with dark brown: they are, on an average, smaller than those of the Herring-Gull.

Incubation begins early in May.

There are numerous colonies in the British Isles, though some are far distant from others. The Farne Islands, colonised also by several other species of sea-fowl, have a strong assemblage of these Gulls in the nesting-season. The Northern and Western Island-Groups of Scotland, as well as the moors of Northumberland and Cumberland (the latter as inland sites), may also be mentioned.

In Ireland there is a large breeding-station in the co. Kildare, described by Mr. Palmer ('Irish Naturalist,' 1898, p. 186), and Mr. Üssher mentions a bog-land breeding-ground in the co. Antrim, at an elevation of a thousand feet, which is tenanted also by Curlew.

Geographical distribution.—Abroad, this Gull breeds in Northern Europe, as far north as Norway (though not in Iceland), and as far east as long. 45° E. Southward it is found breeding in smaller numbers in the Channel Isles, along the coast of France, and in the Mediterranean. On migration, in autumn and winter, its range extends along the West African sea-board as far south as lat. 20° N. Eastward it occurs in Egypt, Nubia, the Red Sea and the Persian Gulf.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, neck, breast, abdomen, and tail, white; back and wings, varying from dark greyish blue-black to black; scapulars and secondaries, broadly tipped with white; three outer primaries, dusky-black, with white tips, and greyish along the edges of the inner webs; first and second primaries have white 'eyes' near the tips; remaining primaries, chiefly lead-colour, barred with black and tipped with white.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Differs from the nuptial plumage in that the head and neck are streaked with greyish-brown.

Immature, male and female.—In the immature chequered plumage, before the wings darken, the Lesser Black-backed Gull closely resembles the Herring-Gull of the same age. But even in the first season the back and wings of the former are darker and the primaries are nearly uniformly

black.¹ The mature markings are gradually assumed, the mottled feathers first disappearing from the back and upper parts of the wings. A second year's bird, showing the dark wings, and still retaining most of the chequered plumes of the under parts, appears on a dull, wintry day almost as dark as a Great Skua. The tail of the Lesser Black-backed Gull remains banded for several seasons, breaking up into mottlings before becoming pure white. The adult plumage is not completed until the fourth year.

BEAK. Yellow, red at the angle.

FEET. Bright lemon-yellow.

IRIDES. Pale straw-colour.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	22 in.	Female smaller.
WING	...	...	16 "	
BEAK	...	...	2.5 "	
TARSO-METATARSUS	...	...	2.6 "	
EGG	...	...	2.9 × 1.9 in.	

Allied Species and Representative Forms.—*L. affinis*, larger, with a coarser foot, and with paler back and wings, called the Siberian River Gull, is the Eastern representative. *L. occidentalis*, with a very stout beak, and darker back and wings than in *L. affinis*, inhabits the Pacific Coast of North America.

GREAT BLACK-BACKED GULL. *Larus marinus* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 55; Dresser, 'Birds of Europe,' vol. viii, pl. 604; Lilford, 'Coloured Figures,' vol. vi, pl. 25; Booth, 'Rough Notes,' vol. iii, pl. 37.

This majestic bird, the largest of our indigenous Gulls,

¹ This distinction can only be arrived at when the two immature species are examined together in the hand. On the wing it is most difficult to discriminate between them after they have left their breeding-grounds and have taken to the coast. However, in August and early September, young Lesser Black-backed Gulls in dappled plumage may be seen following a parent, or, at all events, an adult of its own kind. and this is, I have found by experience, an opportune moment for securing a specimen of this bird.

frequents the rock-bound as well as the flat and sandy portions of the coast. It is tolerably widespread over the British Isles, appearing less plentiful than it really is, owing to its solitary and wary habits. Save at the nesting-sites, it is generally seen alone or in small parties, but an abundance of offal, such as stranded carcasses, will bring double or treble the usual numbers together. The figure of this giant Gull, standing on the sands amid hundreds of smaller birds, is known to most of us. Its pose, motionless but stately, as though discarding its surroundings and the ceaseless activity of its smaller companions, its lordly size, powerful build, and handsome plumage, at once enlist our admiration, despite its cruel and cunning habits.

The Great Black-backed Gull is a true lover of the sea, rarely visiting inland waters. Hardy by nature, it can brave the effects of the roughest weather, and is equally at home on the rugged, storm-swept shores and islands remote from human habitation, as in the shelter of our bays and harbours. Its superior strength renders it more than a match for the Falcon or Skua, so that in its maritime home it dwells in comparative safety.

This Gull is notorious for its cunning sagacity; it rises from the ground with apparent indifference, flaps its great wings leisurely, almost sluggishly, yet all the time it is cool and collected, and can, to a nicety, calculate the right time to shun any approaching danger.

Flight.—In the air the bird is seen to the best advantage, now gliding past with immense outspread pinions, now indulging in magnificent wheeling movements, suddenly a downward dart to the water and up again, finally sailing out to sea, until the mighty form is lost to view.

Voice.—The cry, though hoarse, is feeble and muttering, differing from the characteristic, discordant yell of most other Gulls. The note may be syllabled *àc-äg-äg*, *àc-àc-äg-äg*, often uttered during flight, especially when the bird passes an observer at close quarters.

Food.—This rapacious creature purloins the eggs and fledglings of various sea-birds, captures and devours small land-birds whenever opportunity arises, notably during their migration over the sea, and ferociously attacks wounded birds, some as large as itself. Winged Wigeons fluttering on the sea are quickly despatched, and even uninjured Brent Geese rise when this pirate appears overhead (Ussher). Mammals, such as rats and young rabbits, are seized and torn to pieces by

its formidable beak; even weakly lambs may fall victims (Saunders). Fish, dead or alive, are consumed in great quantities, a Great Black-backed Gull being capable of swallowing a mackerel two pounds in weight (Payne-Gallwey, 'Fowler in Ireland'). At the same time this species is a good scavenger, stranded and foul-smelling carcases being speedily demolished. The numbers of dead dogs, cats, pigs, &c., washed ashore from time to time at the mouths of city rivers always attract party-gatherings. I have seen two (which I surmise were the same couple each time, one being a mottled first year's bird, the other older, and showing the signs of mature plumage about the back and wings) resort daily to a particular spot on the beach, just as the receding tide began to lay bare the drowned carcase of a large terrier dog moored to the spot by a stone attached to the neck-rope. On my approach they walked sedately from their feast, returning when I ambushed myself behind a sand-bank. They always moved to and from the carcase with the same deliberate gait, looking suspiciously on all sides before resuming their repast. In less than a week the carcase was reduced to hide and skeleton.¹ The animal had been drowned when in good condition, and was fresh when I first discovered the Gulls attacking it.

Nest.—In the breeding-season the Great Black-backed Gull becomes more or less gregarious, though its colonies are often composed of but very few pairs. It usually selects the summit of a lonely stack which is tenanted by a single pair, but, on larger islands, several eminences are thus occupied; and in the case of the Bills of Achill, lofty rocks that stand seven miles from Achill Head, Mr. Ussher found, in 1890, probably the largest British colony known, estimated at some fifty pairs. He writes:—"The young, and the nests which they had in many cases quitted, lay around us among bosses of gigantic thrift, not on the top of the rocky ridge, but on the slope beneath it facing south" ('Birds of Ireland'). In Scotland and in the Lake district, it breeds away from the tide on the islets of mountain-lakes. The nest, like that of many other Gulls, is composed of grasses, bits of

¹ I kept this carcase under close observation daily for the short time that it was visible at ebb-tide, and with the exception of occasional visits from a few Herring-Gulls, it was apparently entirely disposed of by the two Black-backed Gulls.



W. D. Latimer, Photo.]

Fig. 1.

KITTIWAKE GULLS AND YOUNG.

Specimens collected and mounted by the late Mr. E. Williams.



W. Latimer, Photo.]

Fig. 2.

GREAT BLACK-BACKED GULL.

Specimen mounted by the late Mr. E. Williams.

stems, and seaweeds. The eggs, two sometimes three in number, are yellowish-brown or stone-colour, heavily blotched with umber and greyish-brown.

Incubation begins in May.

Around the sea-board of Northern Britain, including the large Island-Groups, the bird is fairly abundant in the nesting-season. Colonies of over twenty pairs breed in the Outer Hebrides.

Likewise, round the greater part of the Irish coast it may be found breeding, except, perhaps, in the north-east. In the west it is more numerous than the Lesser Black-backed Gull.

Along the English coast its breeding-haunts are much more restricted, the south and west sides, including Wales, harbouring only limited numbers.

Geographical distribution.—Abroad, this species is widely distributed over Northern and Temperate Europe, Greenland, and the North-eastern section of Canada. On migration, in autumn and winter, it occurs as far south as the shores of the Mediterranean and the Canary Islands on the North African coast. Westward, along the American sea-board, it reaches lat. 30° N.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*¹—Head, neck, breast, abdomen, and tail, white; back and wings, slaty-black; all the primaries, broadly tipped with white; outer primaries, chiefly blackish, except the tips; outer webs of other primaries chiefly blackish, inner webs, greyish; secondaries and scapulars, also tipped with white forming an alar bar.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Differs from the nuptial plumage in that the head and neck are streaked with greyish-brown.

Immature, male and female.—Dappled with greyish-brown like the immature Herring-Gull, but the markings are paler and more defined. Seasonal plumage-changes.

¹ I have seen this bird retain its nuptial plumage throughout the winter in a state of captivity.

comparable to those of the preceding bird, take place, maturity being reached about the fifth year.

BEAK. Yellow, red at the angle.

FEET. Flesh-colour.

IRIDES. Straw-yellow.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	29 in.	Female smaller.
WING	... ..	19 "	
BEAK	... ..	2.6 "	
TARSO-METATARSUS	.	3 "	
EGG	... ..	3 × 2.1 in.	

Allied Species and Representative Forms.—*L. schistisagus*,¹ of Stejneger, occurs in Behring and Okhotsk Seas. It is on the whole smaller and lighter on the back and wings than *L. marinus*.

GLAUCOUS GULL. *Larus glaucus* (O. Fabricius).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 57; Dresser, 'Birds of Europe,' vol. viii, pl. 605; Lilford, 'Coloured Figures,' vol. vi, pl. 26; Booth, 'Rough Notes,' vol. iii, pl. 38.

The Glaucous Gull,² another magnificent sea-bird which almost equals the great Black-backed Gull in size, is an autumn and a winter visitor to our shores from more northern latitudes, occurring chiefly in severe weather. A certain number appear to remain until spring, especially in North Britain, where the species is most frequently met with. In the Shetlands it has been observed as late as June,³ but has never bred there (Saunders). In the Solway

¹ According to Mr. Saunders "*L. schistisagus* has no close affinity with *L. marinus*, but rather inclines to the Herring-Gull section" (Cat. Birds Brit. Mus., vol. xxv, p. 260).

² Dr. Lawrence Edmonston first introduced it to notice as a British bird, having obtained young individuals in the Shetlands in 1809, 1814, and up to 1821, when he proposed naming it *Larus islandicus*. In March, 1821, he described an adult bird.

³ In Ireland, three instances of its occurrence in July, are stated by Thompson (Nat. Hist. Irel.).

district it has occurred only in winter, and not in quite mature plumage (H. A. Macpherson). Immature birds are seen on Barra, in the Outer Hebrides, every winter and spring (Harvie-Brown).

Specimens have often been procured along the eastern sea-board of England, the bird becoming scarcer along the southern coast. In some seasons this Gull occurs in far greater numbers than at other times. Thus in January, 1881, several were brought ashore in fishing-smacks, twenty-seven being offered for sale in one lot at Great Yarmouth (A. Patterson, 'Zoologist,' 1901, p. 296). On the western side of England and in Wales it is quite uncommon.

From Ireland there are numerous records, especially from the north-western sea-board. The bird probably occurs in other districts more often than is supposed, but in the absence of observers has no doubt been overlooked. I am strongly inclined to think that it appears annually along the Irish coast, though in some seasons few only may occur. According to Sinclair, Rathlin Island and the coast of Donegal are visited every winter. From the Mayo coast, Mr. Warren cites many instances ('Irish Naturalist,' 1892, p. 154), and the coasts of Galway, Kerry, and Cork, have also been visited. The Glaucous Gull is apparently rarer on the eastern shores of Ireland: however, I have noted several on the slob-lands of Dublin Bay. On the coasts of Wicklow and Wexford it has not been identified (Ussher). An unusually large visitation of this and the next species took place in the winter of 1892, when birds were obtained in districts widely apart (R. Patterson, 'Irish Naturalist,' 1892, p. 19). Yet, at the most, it must be regarded only as a wanderer to our shores, generally appearing in immature dress, singly or in couples. It is very rare on inland waters.

Though often described as being shy of approach, I have seen immature birds comparatively tame. Thus on September 14th, 1894, whilst shore-shooting on the marshes of Dublin Bay, in company with Dr. N. H. Alcock, an immature Glaucous Gull flew twenty yards over our heads, when my companion immediately fired and brought it down. This specimen, now preserved in the Science and Art Museum, Dublin, was distinctly less fearless than hundreds of Common and Herring-Gulls, which seldom ventured within range, even before a shot was fired. Again, on March 18th, 1901, I saw another in similar plumage,

in the same locality, greedily tearing at a carcase of a cat washed ashore. The bird allowed me to advance to within thirty yards of it, and did not move until it saw me peering suspiciously at it through my binoculars. It then walked sedately a few paces from its feast, just as a Great Black-backed Gull would do, and slowly flapped out to sea. Another occasion on which I met a Glaucous Gull that admitted near approach was on December 30th, 1897, in Dingle Harbour, when one flew past me on the wing only some twenty yards away.

Flight.—This bird can readily be distinguished on the wing from the large indigenous Gulls, if sufficiently near for the absence of black on the primaries to be noticed. From the Iceland Gull, which it closely resembles, it may be distinguished by its larger size, shorter wings, and heavier flight. A Glaucous Gull, flying, looks almost as large as a Great Black-backed Gull; an Iceland Gull is more the size of a Herring-Gull.

Voice.—The voice is hoarse, the note produced being a loud cackle.

Food.—This and the Great Black-backed Gull feed much after the same fashion, both greedily devouring stranded carcases. I have observed this habit on the Dublin coast. Cox refers to one seen in the last-named district, which resorted for food to a carcase for a week or ten days. The bird is omnivorous, and when immature is known to eat, among other things, the berries of *Empetrum nigrum*, in South Greenland (Saunders).

Nest.—The Glaucous Gull builds not only on precipitous cliffs, but also on low-lying rocks and on sand-banks. The eggs, generally laid in June, are stone-colour, spotted with light grey and brown.

Geographical distribution.—This bird has a remarkably wide geographical distribution; in its breeding range in summer it is circumpolar. According to Mr. Saunders it is common and resident in Iceland.¹

The winter migration extends to Southern Europe, including the Mediterranean basin, Black and Caspian Seas; eastward over the sea-board of the Asiatic Continent to Japan, and westward along the American coasts to California on the Pacific side, and the Bermudas on the Atlantic side.

¹ Mr. F. Coburn states that he only met three individuals in North Iceland in the summer of 1889 ('Zoologist,' 1901, p. 415).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, neck, breast, abdomen, and tail, white; back and wings, pale ‘pearl’ grey; scapulars, secondaries, and outermost webs of the primaries, tipped with white.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Differs from the nuptial plumage in that the head and neck are streaked with pale greyish-brown.

Immature, male and female.—The plumage is light buff-colour, profusely streaked and mottled with light ashy-brown: outer primaries, light nut-brown on the outer webs, paler on the inner webs. With each moult the bird becomes lighter, until, for a short time before maturity it is entirely pure white. At this phase of plumage, in which the ‘pearl’ coloured feathers of the fully adult bird have not yet appeared, the Glaucous Gull was described as *L. hutchinsi* of Richardson; Mr. Saunders disposes of the idea of a separate species, having watched the successive plumage changes in captivity.

BEAK. Yellow, orange at the angle.

FEET. Bright pink.

IRIDES. Yellow; margin of eyelids, vermilion-red.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	29	in.	Female smaller.
WING	...	18	„	
BEAK	...	2.5	„	
TARSO-METATARSUS	...	2.75	„	
EGG	...	2.9	+ 2 in.	

Allied Species and Representative Forms.—*L. barrovianus* of Ridgeway, is a Glaucous Gull of Alaska, but Mr. Saunders can find nothing exceptional in specimens from the North Pacific, and the Arctic regions of America, including Greenland. But *L. glaucescens*, which inhabits the Pacific north of lat. 40° N. is smaller, and its primaries are chequered with pale grey. A large and rare representative found in Alaska and Vancouver Island, has been named *L. nelsoni* (Henshaw), while *L. kumlien*, a smaller bird, “with rather more definition in its wing-pattern,”

frequents the east side of Baffin Bay, migrating to New York State in winter.

ICELAND GULL. *Larus leucopterus* (Faber).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 58; Dresser, 'Birds of Europe,' vol. viii, pl. 606; Lilford, 'Coloured Figures,' vol. vi, pl. 28.

Another of the Northern-breeding Gulls, which, in any stage of plumage, may be identified from our native birds by its whitish primaries (Plate XLVI., figs. 1 and 2). As in the case of the Glaucous Gull, its visitations are uncertain, and its numbers fluctuate considerably.

It was first identified as a British visitor in March, 1823, in the Shetlands, by the late Dr. Lawrence Edmonston, and since has been noticed in these islands for several seasons (Saxby).

Along the Scottish coasts it is not infrequent, and is a regular visitor to the Outer Hebrides, where it was particularly abundant in the winter of 1901-2 (Harvie-Brown).

On the Irish sea-board it is probably more widely spread as a visitor than the data which have been furnished from observations and captures would lead us to suppose.

But along the English¹ and Welsh coasts it is comparatively scarce, albeit it has been taken at irregular intervals, even from the extreme south.

Similar to the Glaucous Gull in its migratory movements, it occurs as a mere straggler during some seasons when solitary birds (more rarely two or three) may be found associating with great flocks of Herring-Gulls and other plentiful species; at other times quite an invasion has been observed along a particular coast, and it is noteworthy that a similar invasion of Glaucous Gulls often takes place at the same time. Illustrative of this fact we find that large numbers of both these Northern species reached the Firth of Forth in the winter of 1872-3. During the same season, and two years later, Iceland Gulls were plentiful along the southern shores of England (Saunders).

¹ Thus Mr. A. Patterson records only five Iceland Gulls from Great Yarmouth between the years 1852 and 1899 ('Zoologist,' 1901, p. 296).

In the first issue of the 'Irish Naturalist,' viz., 1892, Mr. Warren details an interesting account of a visitation of Iceland and Glaucous Gulls to the Irish coast, in January and February, 1892. They were observed chiefly on the north-west coast, extending their range to the southern counties.¹ Prior to this time the Iceland Gull was looked upon as a very rare Irish bird, but owing to the investigations of Mr. Warren, who became acquainted with it in 1849 in Cork Harbour, and has furnished us with a long list of occurrences² chiefly from the west,³ but also from the southern coasts, it is now known beyond doubt that as far as Ireland is concerned, the Iceland Gull occurs as frequently as the Glaucous Gull, if not in larger numbers. This, Mr. Warren says, may be accounted for by the fact that the chief breeding-haunts are in Arctic America, and so the Atlantic-facing shores of Ireland are more in the line of the southern migration than those further east; the Glaucous Gull, on the other hand, breeding further eastward, is the more numerous species along English and Scottish shores.

Iceland Gulls have been observed and shot from time to time on the Dublin coast. On March 4th, 1900, a fine specimen, which had almost assumed the mature plumage, was obtained in Kingstown Harbour.⁴ The late Mr. E. Williams, to whom the bird was sent for preservation, wrote me, "I interviewed Mr. Higginbotham, who shot the Iceland Gull, and he states that in Kingstown Harbour it was fiercely mobbed by Herring-Gulls and others. Could they have mistaken it for an albino of their own species, for there was another Iceland Gull in the same place, much more straw-coloured and mottled, I suppose younger, and this was unmolested? The pale flight-feathers were very pretty and beautifully contrasted with those of our own Gulls, which looked blacker than ever."

¹ There were five Glaucous Gulls recorded from Rathlin, Donegal, Mayo, and Galway, and eleven Iceland Gulls from Donegal, Mayo, and Kerry. In May, 1892, an Iceland Gull was obtained in Cork (Ussher).

² See also Ussher, 'Birds of Ireland,' p. 344.

³ To which may be added a capture from Galway, on February 23rd of the present year. This specimen, a female in immature plumage, was generously presented to me by Mr. W. Milne, who shot it. (Plate XLVI., figs. 1 and 2.)

⁴ Through the kindness of the late Mr. E. Williams, I was enabled to examine this bird in the flesh, freshly killed, from which I made measurements.

On April 15th, 1902, I had the good fortune to observe an Iceland Gull—in full adult nuptial plumage—at the mouth of the River Liffey, Dublin. I viewed it from the deck of one of the cross-channel steamers, and twice it almost brushed past my head. Presently it joined a flock of Herring-Gulls congregated round a fishing-smack, from which offal and other rubbish was being cast out. Amidst this clamorous crowd I kept the fair-plumed bird in view, and noticed how gracefully it wheeled and sailed on the wing. More beautiful still did it appear as it passed to and fro in front of the dark sails of a trawler, and displayed its pale pinions against this most excellent background. I noticed that it frequently swooped to the water and demolished bits of dead fish, &c.

It is generally admitted that the Iceland Gull as a species, is less wary and suspicious of man's approach than the Glaucous Gull. Thompson, in his 'Natural History of Ireland,' cites an instance of one of these birds remaining on the ground while being stoned by boys, and only flying a few yards when actually struck.

Flight.—Attention has already been drawn to the contrast exhibited by this and the Glaucous Gull on the wing (p. 440). The marked buoyancy and grace with which the Iceland Gull glides on its proportionately longer and more pointed pinions, are features by which it is not easily mistaken.

Voice.—The voice is harsh and discordant, and the notes are often repeated in rapid succession.

Food.—Here again the Iceland Gull differs somewhat in its habits from its larger Northern congener; the former may be seen consorting amicably with other Gulls in fields,¹ following the plough in search of grubs, rather than hunting the shore to obtain a meal off a stranded carcase. Mr. Warren states that he has never seen this species feeding on carrion or approaching a carcase lying on the shore ('Irish Naturalist,' 1892, p. 154-5), though other writers seem to differ on this point. I have not seen it actually tearing a carcase, but it seems significant that in addition to the bird which I observed feeding on dead fish thrown from a trawler (*vide supra*) I noticed, on another occasion,

¹ I examined the gizzard of the specimen obtained in Kingstown Harbour on March 4th, 1900 (p. 443), and found quantities of shreds of corn-stems and roots mixed up with a few shrimps and small fish-bones.



Fig. 1.

ICELAND GULL.

(Immature.)

Showing the whitish primaries.

From a specimen in the flesh collected by Mr. W. Milne.



Fig. 2.

LEFT WING OF ICELAND GULL.

(Immature.)

Showing the whitish primaries.

From the same specimen as Fig. 1.

an immature Iceland Gull, swoop to the surface of the dark waters of the River Liffey, Dublin, and swallow foul-looking, floating refuse. Small crabs, fishes, and other marine creatures, grain, and vegetables, are also eaten.

Nest.—As building-sites, exposed ledges of high cliffs are selected. The eggs vary from two to three in number and are greenish-buff blotched with dark brown.

Geographical distribution.—The term 'Iceland' is hardly applicable to this species, seeing that it does not breed in the country which bears its name. Its breeding-home is mainly in Arctic America. Thus it is plentiful in the summer in Jan Mayen Island and in Greenland, and perhaps breeds on the American side of Baffin Bay. On migration in autumn and winter it visits Iceland, the Faroes, Scandinavia, and the sea-board of Western Europe to the coast of France. Along the North American coast the migration-line in winter extends as far South as Boston.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head, neck, breast, abdomen, and tail, white; back and wings, pale 'french' grey; secondaries, tipped with white, forming a wing-band.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Differs from the nuptial plumage in that the head and neck are spotted and streaked with pale greyish-brown.

Immature, male and female.—Said to be darker than the immature *L. glaucus* (Kumlien), but of much the same pattern of plumage, and also passing through similar seasonal¹ changes, maturity being attained in the fourth year.

BEAK. Yellow, red at the angle.

FEET. Pale flesh-colour.

IRIDES. Pale yellow; margin of eyelids, pale flesh-colour.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	22 in.	Female smaller.
WING	...	...	16 "	
BEAK	...	...	2.4 "	
TARSO-METATARSUS	...	...	2.5 "	
EGG	...	...	2.75 × 1.8 in.	

¹ I have not as yet seen a pure white phase of plumage immediately preceding maturity, though it seems probable that it is assumed, as in the case of the Glaucous Gull.

Note.—The tips of the longest primaries extend fully 2·5 in. beyond the end of the tail, while those of *L. glaucus* only reach to the end of the tail-feathers, or, at the most, about half an inch beyond the tail.

KITTIWAKE GULL. *Rissa tridactyla* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 61; Dresser, 'Birds of Europe,' vol. viii, pls. 607, 608; Lilford, 'Coloured Figures,' vol. vi, pl. 29; Booth, 'Rough Notes,' vol. iii, pl. 39.

This attractive Gull is familiar to those who have opportunities of visiting the precipitous cliffs of mainlands and marine islands during the spring and summer months. At such seasons the Kittiwake is very abundant in most districts, but in winter the headlands are quite deserted for the open sea, so that the bird then appears much scarcer round our coasts. It is not nearly so generally distributed as many of the other Gulls; in fact, it is essentially pelagic. Thus if one carefully observes, with a binocular, the multitudes of Gulls which are dotted over the ooze-flats or the ploughed pasturage, and the 'offal-eating species' flitting along our city-quays, rarely, if ever, is a Kittiwake seen among their numbers. It is rather the deep blue waters of the open sea that this Gull delights in. None the less, it is a friendly visitor to our fishing-ports and harbours, where now and again it may be seen flying to and fro, or perched on a pier, a floating buoy, or on the side of an empty boat.

At times it is a great wanderer, indeed, I have seen it, during its peregrinations, escorting steamers across the North Atlantic Ocean, for three consecutive days, covering a distance of approximately 1,000 miles. Bits of bread thrown overboard will rapidly attract numbers together, and so greedy are the birds to secure the booty that those nearest may be seen swooping to the water the instant one's arm is raised even in pretence of throwing food. I have seen this confiding bird follow trawlers and small pleasure-boats, sometimes within an oar's length.

Flight.—The gentle but well-sustained flight resembles



A BEETLING ROCK-PINNACLE.

Tenanted by Kittiwake Gulls seen in the distance as white specks.

that of other Gulls; when fishing, the bird may be seen sometimes poisoning like a Tern and dropping suddenly to the water, under which it can swim in pursuit of fish.

Voice.—This is the only one of our Gulls which may be said to possess melody in its voice. Even when loudest, the note is full of music and pathos. The oft-repeated echoing chant resounds from the cliffs beneath, now waxing to its fullest until it bursts into a glad chorus, now waning into a silence broken only by the roaring of the waves washing the beetling cliffs. The note, once heard, is hardly forgotten; it sounds remarkably like the syllables, *kitti-wàke*, *kitti-wàke*, *kitti-wàke*; hence the bird's name.

Away from its breeding-haunts this Gull is comparatively silent, indeed, I have seldom heard it utter any note when flying over the sea.

Food.—Being essentially marine in its habits, it lives almost entirely on small fish captured on or near the surface. It does not appear to be an offal-eater, but will accept morsels of bread, meat, &c., cast out from vessels.

Between August and October immature and adult birds may be seen fishing along the coasts. Later in the season they go out to sea, and few are seen in winter.

Nest.—Early in March, on the ledges and narrow shelf-like fissures of sheer, rocky cliffs, rising often several hundred feet out of the sea, the sociable Kittiwakes gather together in hundreds and thousands for breeding-purposes, fraternising freely with other cliff-resorting birds, especially Guillemots, which show a like taste in their nesting-sites. In suitable situations, such as on the weathered face of a great limestone rock, every available projection may be occupied by a pair of Kittiwakes; indeed, adjacent nests often touch one another, or a long shelf may accommodate a line of families, below and above which similar 'flats' may be noticed. These horizontal 'tiers' of white birds, separated by an alternating line of dark rock, give the cliff a stratified appearance when viewed some distance away. It is remarkable how well each occupant knows its own little ledge, to which it may be seen ascending from the sea, alighting as quickly as any pigeon would on the platform of its own particular part of the dovecot. Still, as among all other gregarious creatures, 'give and take' squabbles at times arise. This I have noticed oftener where the colonies are densely crowded and the space rather more curtailed than is usual. In June, 1893, Pro-

fessor W. J. Sollas kindly invited me to join his expedition to Lambay Island, off the Dublin coast. We remained there for ten days, sleeping under canvas, and during that time many good opportunities were afforded of studying these Gulls, during the breeding-season, on the cliffs (Plate XLVIII.). I witnessed several tussles, but the birds never seemed to cause each other serious damage. I have seen two (presumably males), enter into combat in order to gain sole right of a suitable nesting-site, the female all the while sitting closely on her eggs or young. The fight begins by the birds 'pick-axing' each other with their beaks, next the wings are raised, and the pugilists closing in, endeavour to dislodge each other from the cliff. Sometimes the weaker one gets tired of the entertainment and flies off; less often the two birds, with unabated fury, sticking to each other, roll and flutter down the cliff almost to the sea, and then rise again into the air in hot pursuit. But the aerial combat never seemed to last long, the birds, after one or two swoops, settling down each on his rightful place. From this one must not infer that the Kittiwake is a pugnacious type of bird, the scenes described being exceptional rather than otherwise. In fact, the harmony which, as a rule, reigns in Kittiwake-colonies, and the gentle behaviour of these birds to one another, are most pleasing to behold.

From the summit of the cliff several pairs may be seen nestling close to one another, 'billing' and 'cooing' long before they commence to incubate. Later in the season a male may be noticed speeding towards the cliff with a fish in his beak.¹ For this he receives extra caresses from his spouse, who, with uplifted wings, greets his return. And now he raises his wings in response, while both cross their necks from side to side.²

The nests take some time to construct, and during March and April the members of the colony are busy at work. The materials used are grass and seaweeds in which feathers occasionally get mixed up. These, compounded with a basis of soft muddy clay, are pressed into a rather

¹ The males feed the sitting-females during the breeding-season.

² Even in the early breeding-season, before the male has commenced to feed the female, he is greeted home in the same way. I have watched the habits of Kittiwakes in several localities, as early as the first week in March.



[N. H. Appleton, Photo.]

KITTIWAKE GULLS.

Nesting on the cliffs of Lambay Island, Co. Dublin.

compact mass. The outer wall is composed chiefly of mud, which adheres to the ledge and fits on it in a most secure manner. The dimensions of the nests vary in accordance with the available platform space.

The owners spend a considerable part of the day guarding their homes¹ (space being at a premium, I presume), for six weeks or more prior to hatching. The lowest nests are often but a few feet from the base of the cliff, and the uppermost ones may be two or three hundred feet above. I have not seen many nests placed at the summit.

The eggs, two to three in number, are greyish-white or dull stone-colour, blotched and zoned with lighter and darker shades of brown.

Incubation begins in May, but is not general until the end of that month or early in June.

The Kittiwake is an extremely abundant breeding-species round the British coast, resorting to islands as well as to the mainland. Multitudes of birds compose some colonies, and may be seen on the cliffs of the Orkneys, Shetlands, and Hebrides. The Shiant Islands possess probably the largest assemblages of Kittiwakes in Great Britain.

On the Irish coast may be mentioned Rathlin Island, Horn Head, and Tormore; the latter is described by Mr. Ussher as "a colossal pillar-like rock off the western peninsula" of Donegal. On the cliffs of Moher, co. Clare, Kittiwakes breed several hundred feet above the sea-level. Smaller colonies are too numerous to mention; on Ireland's Eye and on Lambay Island, on the east coast of Dublin, I have seen them consisting of as few as seventy pairs.

Geographical distribution.—This species has a remarkably wide geographical distribution. Abroad it breeds in countless throngs in Spitzbergen, Norway, Iceland, the Faroes, and southward along the European sea-board to the north-west coast of France.

On the American Continent it is found nesting as far

¹ The detestable practice of shooting Kittiwakes at their breeding-homes should receive the most open public condemnation. I quote the words of Mr. Saunders, which clearly point out how these unfortunate creatures were nefariously victimised. He says the eggs "are seldom laid until the latter part of May, so that many of the young could scarcely fly—while others were still in the nest—when the original Sea-Birds Protection Act expired on August 1st; consequently thousands were formerly slaughtered to provide plumes for ladies' hats" ('Manual of British Birds,' 2nd Edition, p. 684).

south as the Gulf of St. Lawrence on the Atlantic side, and the Kurile Islands on the Pacific side. In the Arctic regions it is practically circumpolar in the breeding-season, having reached $81^{\circ} 40'$ in Smith Sound. On migration in winter it visits the Mediterranean, extending eastward to the Black and Caspian Seas, and southward to North Africa and the adjoining Islands, to about lat. 30° N. Along both sides of the North American sea-board it is found as far as lat. 35° N.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, neck, breast, abdomen, rump, and tail, white; back and wings, deep 'french' grey or light slate-colour; scapulars, margined with greyish-white; secondaries, broadly edged with white; primaries, pale 'french' grey; terminal portions of the first three, black; fourth, fifth, and sixth, barred with black and tipped with white; remaining primaries, greyish; outer web of first primary, black.

Adult female nuptial.—Similar to the male plumage.

Adult winter,¹ male and female.—Differs from the nuptial plumage in that the back of the head and neck are patched with greyish-blue, similar in shade to that on the wings; ear-coverts, light bluish-black.

Immature, male and female.²—Back of neck, banded

¹ As a practical hint to collectors, I would say that by keeping a sharp look-out after storms, many valuable specimens may be picked up. Kittiwakes, in winter-plumage, are hard to obtain, as they seldom frequent our coasts at that time of year. One of the best specimens that I have mounted I picked up on the Dublin coast. I have examined a great number of these birds, and have noted that some, washed ashore in late spring, and apparently quite fresh, still retained their winter-plumage. On one occasion I found a dead Kittiwake in winter-dress on the Dublin coast, as late as May 18th, 1901, and on June 9th, whilst sailing in a trawler from Dublin to Lambay Island, a beautiful adult in perfect winter-plumage accompanied the vessel. As we fed the birds a large gathering came round us, but all save the one just mentioned had the snowy-white heads of nuptial plumage. I have made *post mortems* on Kittiwakes 'found dead,' and in a number of cases no signs of violence or even bruises were evident. This suggests that the birds are not always beaten to death against rocks. But I have usually found the stomach and entire alimentary tract completely empty, starvation apparently being an active factor in the cause of death.

² The Kittiwake in immature plumage was formerly known as the 'Tarrock' Gull. It was first figured as an immature Kittiwake in an early edition of 'Bewick's British Birds.'

with black, below which is a greyish portion, followed by a broader black neck-band; inner secondaries and some of the wing-coverts, dappled with brownish-black; first four primaries, blackish on the outer and on part of the inner webs: tail, broadly banded terminally with blackish-brown.

BEAK. Greenish-yellow.

FEET. Blackish; hind-toe, extremely small.¹

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	15·5 in.
WING	...	...	...	12 „
BEAK	...	...	...	1·75 „
TARSO-METATARSUS	...	...	...	1·4 „
EGG	...	...	...	2·15 × 1·6 in.

Allied Species and Representative Forms.—*R. brevirostris* of Brandt, has orange-red feet and darker back and wings than our bird. It is found between Alaska and Kamtschatka.

IVORY GULL. *Pagophila eburnea* (Phipps).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 62; Dresser, 'Birds of Europe,' vol. viii, pl. 595; Lilford, 'Coloured Figures,' vol. vi, pl. 30.

The first recorded British specimen of this Gull was taken in the winter of 1822 in the Shetland Islands. The capture was made known by the late Dr. L. Edmonston, in a paper read before the Wernerian Society of Edinburgh. The bird was presented to the Edinburgh Museum (Bewick, 'British Birds'). Several examples have since been secured from the same Islands, as well as from the Orkneys and the Outer Hebrides.²

On the mainland of Scotland the bird has been recorded

¹ The hind-toe is better developed in some of the Kittiwakes which frequent Behring Sea, though this variation is not necessarily prescriptive of northern races. Even in the same individual the hind-toe may vary considerably in development.

² This Gull was added to the 'Fauna of the Outer Hebrides,' by the late Mr. Buckley, who recorded a specimen from Stornoway, January, 1890 (Harvie-Brown, 'Avifauna Of The Outer Hebrides,' 1888-1902; Ann. Scot. Nat. Hist., 1903, p. 16).

from Sutherland, Caithness, Banffshire, Aberdeenshire, Roxburghshire, and the Firth of Clyde.

In England it has been obtained in the following counties:—Durham, Yorkshire, Lincolnshire, Norfolk, Sussex, Devon, Cornwall, and Somerset. Like other Northern Gulls it is rarer in the south than in the north.

To Wales its visits are exceptional.

From Ireland there are but two well-authenticated records:—A bird was taken in Blennerville, co. Kerry, in February, 1846; two were seen but only one obtained. This, an immature specimen, is now in the Chute Hall collection (Thompson, *Nat. Hist. Irel.*, vol. iii, p. 347). A second was obtained near Bantry Bay, co. Cork, on January 31st, 1852; it is preserved in the Queen's College Museum, Cork.

Mr. Ussher draws attention to the fact that "in both these instances the Ivory Gull visited the south-west of Ireland. Both the Glaucous and the Iceland Gull have been repeatedly obtained in Kerry and Cork, and so has the Greenland Falcon. The coasts of Western Munster are therefore quite within the occasional winter-range of Arctic stragglers, which probably come down the west coast" ('Birds of Ireland,' p. 348).

According to Mr. Saunders, about thirty-five specimens have altogether been procured in the British Isles, more than half of which were adults.

Flight.—On the wing the Ivory Gull is brisk, and often moves with great swiftness; its flight, as described by Col. Feilden, resembles that of a Tern (Saunders).

Voice.—The note is harsh and shrill.

Food.—Fish are largely eaten, also offal of all kinds.

Nest.—The nest may be built either on the ledge of a cliff or on the ground; it is composed of marine vegetable-matter of various kinds, including bits of seaweeds.

The eggs, two in number, are greenish or yellowish-brown in colour, blotched and scrolled with brownish-black.

Geographical distribution.—This Arctic species is completely circumpolar in its breeding-range and plentiful in many parts of the Polar regions of the European and American Continents; its nesting-haunts have been found extending westward to long. 122° W. (Richardson), and eastward to long. 130° E. (Nansen Expedition, 1894). On migration in winter it is met with along the coasts of Europe, to the North of France, and down the American sea-board to New Brunswick.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.* — Completely white, tinged in life with a rosy hue.

Adult female nuptial. — Similar to the male plumage.

Adult winter, male and female. — Apparently similar to the nuptial plumage.

Immature, male and female. — Cheeks and throat, greyish; back, wing-coverts, and tail-coverts, spotted with grey and black; tips of primaries, blackish; tail, with a subterminal band of black; rest of plumage, white.

Nestling. — Greyish.

BEAK. Lead-colour, tipped with reddish-yellow.

FEET. Black; hind-toe fully developed.

IRIDES. Blackish-brown; margin of eyelids, brick-red (Feilden).

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	18	in.	Female smaller.
WING	... ..	13	„	
BEAK	... ..	1.75	„	
TARSO-METATARSUS	...	1.5	„	
EGG	... ..	2.5	× 1.7 in.	

Family STERCORARIIDÆ.

GREAT SKUA. *Megalestris catarrhactes* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 78; Dresser, 'Birds of Europe,' vol. viii, pl. 609; Lilford, 'Coloured Figures,' vol. vi, pl. 31.

This powerful sea-bird is at all times a scarce autumn and winter visitant to the British coast, and as it generally keeps out to sea, it appears all the more rare. It is, however, not infrequent on the north coast of Scotland, which is not far from its breeding-haunts on the Shetlands, where it is protected. On the contrary, it has been persecuted in the Faroes, rewards having been offered for its head. As a consequence it is now rare in these Islands. The Great Skua was first recorded in the Outer Hebrides by the late Mr. Buckley, who, on January 8th, 1894, saw a specimen which had been shot in North Harris. "Another is recorded by Dr. M'Rury on the authority of Miss Edgar, daughter of the lightkeeper at Barra Head, in the summer of 1893" (Harvie-Brown, 'Avifauna Of The Outer Hebrides,' 1888-1902; Ann. Scot. Nat. Hist., 1903, p. 17).

It is very seldom met with inland.

About eleven specimens have been obtained in Ireland, the counties and dates of capture being as follows:—

Dublin:—One, Dublin Bay, early in July, 1833 (Thompson, Nat. Hist. Irel., vol. iii, p. 390); another, Portmarnock, November, 1836 (*ibid.*); a third, taken alive in Dublin Bay (Watters, 'Birds of Ireland,' p. 263); a fourth, Clontarf, October 1st, 1880, received by Messrs. Williams and Son: now preserved in the Dublin Museum.

Down:—Two, Belfast Lough, August, 1848; one, Holywood, September 18th, 1848 (Thompson).

Galway:—One, 1835 (Thompson), now preserved in the Trinity College Museum.

Cork:—One, Bantry Bay, winter, 1845-1846 (Thompson).

Kerry:—One, Tralee Harbour, date uncertain, in the collection at Chute Hall.

Tipperary:—One, near Thurles, November, 1894, received by Messrs. Williams and Son. This is an interesting record of a bird picked up inland after a storm, and appears to be the most recent Irish occurrence.

Recently a Great Skua was obtained at Dungeness, on October 4th, 1900 (W. R. Butterfield, 'Zoologist,' 1900, p. 521); another in the Isle of Man, December, 1903 (Raffe, 'Zoologist,' 1904, p. 33); another, obtained near Robin Hood's Bay, Scarborough, on June 29th, 1904 (W. J. Clarke, 'Zoologist,' 1905, p. 74); while on September 21st, 1901, Mr. Caton Haigh observed a large dark Skua (probably *S. catarractes*) on the coast of North-east Lincolnshire ('Zoologist,' 1902, p. 132).

On July 20th, 1903, when in company with the late Mr. E. Williams, of Dublin, I had a splendid view of a Great Skua in Holyhead Harbour, not far from the landing stage, an unusual place for such a seafaring¹ pirate to frequent. I made my observations from the deck of one of the cross-channel steamers as she moved slowly out of the harbour. When first observed the bird was swimming on the water. Presently it rose, and with rapid beat of wing, directed its course towards a Lesser Black-backed Gull which was fishing some two hundred yards ahead. Perceiving its aggressor, the Gull shot upwards from the water, hotly pursued. The chase was an exciting one, the Skua responding so closely to each evading turn and swoop, that it almost seemed to overshadow the Gull for the greater part of the time. The latter, however, on this occasion, did not forfeit its recently-swallowed meal, but managed to escape its tormentor by settling on the water. Finding the chase of no avail the Skua then flew out to sea.

Flight.—Like that of other members of its Family, the flight is powerful, buoyant, and full of rapid turns and twists, resembling at times the flight of birds of prey.

Voice.—The note may be syllabled *skūū*, *skūū*, from which the bird has derived its name.

Food.—This species will not only chase Gulls and tire them until they are forced to disgorge their food, which is

¹ I have met this bird flying leisurely in the middle of the North Atlantic Ocean; lat. 56°, 14' N., long. 33° 2' W.

instantly seized (sometimes before it touches the water), but will actually kill sea-birds, especially the smaller Gulls. I believe that small land-birds when met with at sea are also preyed upon. Floating offal is frequently eaten, and the bird is said to devour stranded carcasses. It is, moreover, a notorious egg-robber.

Nest.—The nest is usually situated amidst heather and other moor-land vegetation, and at their breeding-haunts the birds are exceedingly fierce. Two eggs are laid about the end of May, green to greenish-brown in colour and marked with darker blotches.

Geographical distribution.—Abroad, as a nesting-species, the Great Skua is plentiful in Iceland; it also breeds in the Faroes, and sparingly in South Greenland. On migration in winter it visits the waters of Southern Europe, and is found chiefly along the Atlantic sea-board, being rare in the Mediterranean. Westward it reaches the coast of the New England States.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head and throat, dark brown, speckled with rufous; pointed feathers at the back of neck, yellowish-brown; back and wings, dark brown, mottled with chestnut and dull white; primaries, brown with white bases to inner webs; tail-feathers, brown, somewhat streaked with dull rufous, the central pair half an inch longer than the rest; breast and abdomen, reddish-brown; under wing-coverts, brownish-black.

Adult female nuptial.—Similar to the male plumage.

Immature, male and female.—Resembles the adult plumage, but the neck-feathers are less pointed and striated, and the feathers of the back and wings are faintly edged with rufous.

Adult winter, male and female.—Similar to the nuptial plumage.

BEAK. Black; strong, and slightly hooked at the extremity.

FEET. Black; claws, sharply curved.

IRIDES. Brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	21	in.
WING	...	...	...	16	"
BEAK	...	...	...	2·5	"
TARSO-METATARSUS	...	...	...	2·75	"
EGG	...	...	...	2·8 × 2	in.

Allied Species and Representative Forms.—*M. chilensis*, with bright chestnut under-parts and axillaries, inhabits both sides of South America, from lat. 12° S. to the Straits of Magellan.

M. antarctica, a stouter form, sooty-brown in colour, is found in the Falkland Isles and Southern Ocean.

M. maccormicki, a very pale representative, inhabits Victoria Land, from lat. 71° to 76° S. and long. 171° to 178° E. (Saunders).

POMATORHINE SKUA. *Stercorarius pomatorhinus*
(Temminck).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 79; Dresser, 'Birds of Europe,' vol. viii, pl. 610; Lilford, 'Coloured Figures,' vol. vi, pls. 32, 33; Booth, 'Rough Notes,' vol. iii, pls. 40-42.

The Pomatorhine Skua is in all likelihood a regular annual visitor during autumn and winter to British waters, but much rarer on its passage northward in spring. It usually appears in limited numbers, though during certain seasons quite remarkable migrations have taken place. It is more often met with on the eastern sea-board of Great Britain than on the opposite side. On the Norfolk coast¹ it appears to be the most plentiful species of Skua, occurring chiefly after heavy gales. Stevenson mentions a game-keeper who had thirty in his possession at one time, and probably nearly all Pomatorhines. Large numbers were recorded in 1874, 1879, 1880, and 1881. Furthermore, Mr. Caton Haigh records them for successive years from the coast of Lincolnshire ('Zoologist,' 1902 and 1903).

This Skua has appeared on the Solway Firth as late as December 22nd (Macpherson), and Messrs. Harvie-Brown and Buckley, in their 'Fauna of Sutherland and Caithness,' p. 235, state that it "frequents the oceans and seas of the Outer Hebrides in some numbers every summer of late years." Moreover, a specimen is "recorded by

¹ On the Suffolk coast, however, according to Rev. Julian Tuck, this Skua is rather rare, there being only two records (December 3rd and 19th, 1903) of its occurrence for "the last ten years" ('Zoologist,' 1904, pp. 33, 34).

MacGillivray, as shot by him in Barra, October 1895" (Harvie-Brown, 'Avifauna Of The Outer Hebrides,' 1888-1902, Ann. Scot. Nat. Hist., 1903, p. 17).

Around the Irish coasts this species is scarcer and more irregular in its visits. A remarkable migration, however, took place in October, 1862, of both Pomatorhine and Richardson's Skuas, when successive flocks of the former were observed on the Mayo coast flying southward from Killala Bay in the direction of Galway Bay. As a recent occurrence on its passage northward, may be mentioned a specimen obtained on June 6th, 1906, at Loop Head, co. Clare. Barrington, 'Irish Naturalist,' 1906, p. 193). Storm-driven birds have been occasionally met with far inland.

Flight.—On the wing this bird can be distinguished from its congeners by its peculiar tail. The middle feathers are elongated, but not finely attenuated as in other Skuas. Instead, they end in thick rounded plumes, which, for the greater part of their length, are twisted almost at a right angle, so that their surfaces look right and left instead of up and down like the short tail-feathers. On the whole, the tail is not elegant, the long feathers presenting the appearance of having been displaced and roughly handled.

Voice.—The voice, usually heard when the breeding-haunts are intruded upon, is shrill and rather discordant.

Food.—The fish which Terns and Gulls are forced to disgorge, when terrorised by their pursuer, forms a large percentage of the diet. Wounded birds are torn to pieces: indeed, Mr. Ussher mentions that one of these Skuas was shot at Wexford in the act of killing a chicken. Small mammals, notably Lemmings, are eaten: Watters records a bird which, on dissection, contained the remains of a rat, fish-bones, and feathers. Furthermore, carrion, stranded or floating, does not come amiss to this bird's diversified tastes.

Nest.—The nest is simply a depression in the ground, amid moss, heather, and other vegetation. The eggs, two in number, are olive-brown in colour, with dark brown markings.

Geographical distribution.—The breeding-resorts are in Northern Europe, Asia, notably the Siberian Tundras, at the mouth of the Yenesei, and in Arctic America. The winter-range extends over the European waters to the Mediterranean, and southward along the west coast of Africa.

as far as Walvisch Bay. Eastward this species has been obtained in Burmah and Japan; westward in California and Peru, while it has also been recorded in the Southern Hemisphere from North Australia (Saunders).

DESCRIPTIVE CHARACTERS.

PLUMAGE.¹ *Adult male nuptial*.—Front and top of head, black; acuminate neck-feathers, white, edged with light yellow; lower neck, blackish; back, wings, and tail, brown, the two central twisted tail-feathers being four inches longer than the rest; breast and upper abdomen, dull white; lower abdomen and under wing-coverts, brown.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage, but the feathers of the flanks, upper and under tail-coverts, have a tendency to exhibit striations in adult birds, not quite mature (Saunders, Cat. Birds Brit. Mus., vol. xxv, p. 326).

Immature, male and female.—Brown, mottled and barred with rufous-buff and black; the markings on the breast and abdomen vary gradually from distinct striations to an almost uniform brown; central tail-feathers at first not elongated. The mature plumage is very gradually assumed.

BEAK. Horn-colour.

FEET. Brownish.

IRIDES. Brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH ...	...	...	21	in.
WING ...	...	...	14.25	„
BEAK ...	...	...	1.75	„
TARSO-METATARSUS	...	...	2	„
EGG ...	...	...	2.6 × 1.8	in.

¹ Dimorphism, also melanism, occur in the plumage of this Skua.

ARCTIC SKUA. *Stercorarius crepidatus* (J. F. Gmelin).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 80; Dresser, 'Birds of Europe,' vol. viii, pls. 611, 612, fig. 2; Lilford, 'Coloured Figures,' vol. vi, pl. 34; Booth, 'Rough Notes,' vol. iii, pls. 43-46.

Of the four species of Skuas which migrate during the colder months¹ to British waters, this species, also called Richardson's Skua, is by far the most plentiful. It visits the east side of England in larger numbers and with much greater regularity than the west, while all round the Scottish coast it is by no means scarce. Moreover, a goodly number remain to breed in Sutherland and Caithness, and there are colonies on the Shetlands,² Orkneys, and Hebridean Islands.

It has been more often recorded from the waters which surround the Irish coast than any of its three congeners. Still it can be regarded only as a periodical, not an annual visitant. On its northern passage in spring, it is less often seen; Mr. Warren has observed it in the month of May, chasing Terns at the estuary of the Moy, on the Mayo coast. Here the birds have been noticed to tarry for some days *en route* for their breeding-haunts. Several were seen on Donegal Bay, and one secured there on May 18th, 1881, by Mr. E. W. Holt. Mr. Ussher, in his 'Birds of Ireland' mentions instances of the occurrence of this bird in June.

Like the Pomatorhine Skua, it has made exceptionally large visitations from time to time to our coasts. Interesting accounts have been cited by Mr. Warren, among which may be mentioned a large migration witnessed in October, 1851, at Killala Bay. Small flocks were seen passing in succession in a south-westerly direction until the total number amounted to about a hundred birds.

Flight.—This Skua, when pursuing Gulls and Terns, displays the same adroitness in turning and swooping which so well characterises the whole group. At all times the flight is exceedingly buoyant and well-sustained. A Gull is

¹ After October this Skua becomes rarer on our coasts. Mr. Saxby mentions seeing one on November 23rd, 1902, while several more were observed on the east side of the Shetlands up till December 6th, ('Zoologist,' 1903, p. 157).

² Mr. Eagle Clarke states that on Fair Isle, one of the Shetland Group, this bird, which formerly bred in some numbers, is now reduced to a single pair (Ann. Scot. Nat. Hist., 1906, p. 79).

not infrequently attacked by a pair of Skuas, one of which, dashing straight at it, will keep up the hunt until the poor fugitive, almost exhausted, ejects its food, and this is in part swallowed by the second Skua, which, all the time has kept apace in the flight.

If the nesting-haunts are intruded upon, the Arctic Skua, when brushing by, will almost strike the invader with its wings; but, as remarked by Mr. Saunders, its swoops are directed from behind or sideways, nor has he seen it make a frontal attack.

Voice.—The voice is sometimes querulous in tone, at other times almost pathetic. The note most often heard is *mēē-mēē*: this may be followed by a shorter and more sharply-sounded note, which may be syllabled *mē-āh- mē-āh*, or even *māh-māh*.

Food.—In its piratical methods of obtaining food this Skua resembles its congeners. Fish, ejected from the stomachs of Gulls and Terns, form the chief food, but disabled birds, and helpless fledglings are despatched, while eggs are also plundered. In addition, insects, shell-fish, and worms, are eaten; Mr. Ussher cites an instance where an Arctic Skua was shot when following the plough feeding on worms ('Birds of Ireland,' p. 353).

Nest.—Moor-land sites are selected for breeding-purposes, the nest being but a mere rough hollow in the ground, chiefly among heather and other dry herbage. Several nests, almost amounting to colonies, may be found spread over a large tract of open moor.

The eggs, laid about the end of May or early in June, are normally two in number, of a deep olive colour, blotched or suffused with darker brown.

Geographical distribution.—The Arctic Skua may be said to be quite circumpolar in its breeding-range, and is found in abundance during the nesting-season, from the Scottish Islands northward.¹ But the darker form (*vide* plumage), is rarer in the Spitzbergen Group, and the higher latitudes of Arctic America, while it "predominates towards the southern limit of the bird's breeding-range." In the very high northern latitudes the white-breasted form

¹ "Pennant was the first to discover that it bred in the British Islands, by finding it on the 1st of July 1772 on Jura, which, thanks to the protection accorded to it, it still inhabits, and this must be the most southerly point in its breeding-range" (Newton).

gains the ascendancy (Saunders). In winter the Arctic Skua wanders southward along the European coasts; some birds sojourn at the Mediterranean basin, others proceed along the west coast of Africa, down to the Cape of Good Hope, and beyond to Tasmania and New Zealand. Westward the migration-route extends to California on the Pacific side, and the Barbadoes on the Atlantic side of the American Continent. Eastward this bird reaches the Persian Gulf. It is at once manifest that the geographical distribution is very extensive.

DESCRIPTIVE CHARACTERS

PLUMAGE.—It is generally admitted that this Skua shows distinct dimorphism of plumage; in other words, perfectly mature individuals are not all alike. Two varieties are recognised, the uniformly dark brown bird, which, strictly speaking, is Richardson's Skua, and the white-breasted form, more truly polar in its breeding-range, and hence called the Arctic Skua (Plate XLIX., figs. 1 and 2). Between these, every gradation of intermediate form exists, and is found breeding in many of the Northern Islands of Europe. That there is but one species is clearly borne out by the fact that, on meeting, the birds pair readily, and without distinction of choice of colour-markings; indeed, with regard to the Icelandic birds, Mr. Coburn, who recently obtained an abundant series of dark, light, and intermediate forms, from North Iceland, is of the opinion that two types do not exist, but that the white-breasted birds are simply adults, and take several years to reach that stage ('Zoologist,' 1901, p. 416).

Dark race. Adult male nuptial.—Back, wings, tail, and its coverts, umber-brown; head, neck, breast, and abdomen, sooty-brown.

Light race. Adult male nuptial.—Head, back, wings, and tail, same as in the dark race; hind-neck, dull white, streaked with dark straw-colour; abdomen, ash-brown; throat and breast, white. The lanceolate cheek-feathers in both races are of a yellowish tinge.

Adult female nuptial.—Similar in the respective race to the male nuptial plumage.

Adult winter, male and female.—Similar in the respective race to the nuptial plumages, but with a tendency to striation on the flanks, and on the upper and under tail-coverts, in birds not quite matured.



Fig. 1.—(Light-breasted form.)



Fig. 2.—(Dark-breasted form.)

ARCTIC OR RICHARDSON'S SKUA.

From specimens mounted by the late Mr. E. Williams.

Intermediate forms, male and female.—The white on the throat and breast is marked with light-greyish spots and streaks.

Immature, male and female.—Young birds exhibit the tendency to racial distinction at an early stage, according to several observers. But in both dark and light races the immature birds differ from the adults in having the feathers streaked, barred, or edged with various shades of brown and rufous. The upper tail-coverts are conspicuously barred with dark brown, white, and rufous.

BEAK. Dark brownish-black.

FEET. Dark brownish-black.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	20	in.
WING	...	...	13	,,
BEAK	...	...	1.5	,,
TARSO-METATARSUS	...	...	1.25	,,
EGG	...	...	2.4 × 1.6	in.

LONG-TAILED SKUA. *Stercorarius parasiticus* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 81; Dresser, 'Birds of Europe,' vol. viii, pl. 612, fig. 1; Lilford, 'Coloured Figures,' vol. vi, pl. 35; Booth, 'Rough Notes,' vol. iii, pl. 47.

This bird, also known as Buffon's Skua, may be distinguished when in adult plumage from other British Skuas by its relatively longer and more pointed central tail-feathers. In other respects it bears a resemblance to the two preceding species, and immature examples of all three, with their short, central tail-feathers, might easily be confounded on the wing. The Long-tailed Skua is, however, the smallest, and the most slender and elegant.

On British waters this bird is of less frequent occurrence than either of the two last species, but, like them, it is usually seen in September and October, and again in spring, when passing northward to breed. It is most often met

with along the Scottish¹ coast, next in frequency on the eastern side of England from Yorkshire northward. Elsewhere its visits are on the whole unusual, though, after boisterous weather, considerable numbers have been taken all round the coasts. As a recent large invasion may be mentioned, one which took place in the year 1891, when this Skua was abundant even along the southern shores of England, while examples were procured from several inland counties.² It has been obtained as late in spring as June 4th, 1877, from Cornwall, and June 3rd, 1885, from Cumberland (Saunders). An exceptional instance has been recorded in spring or early summer from the Solway Firth (Macpherson, 'Zoologist,' 1901, p. 285).

With regard to its occurrence in the Hebridean Islands, Mr. Harvie-Brown mentions a specimen caught alive at Scolpig, in North Uist; another was recorded by Dr. M'Rury, from Barra, on May 12th, 1896 (Ann. Scot. Nat. Hist., 1897, p. 150).

It has occurred all round the Irish coast, having been most often taken from the northern and western sides. Mr. Ussher, in his 'Birds of Ireland,' details an account of a migration of this bird when on its northern passage. The movement was witnessed on May 16th, 1860, on the River Shannon, by Lieut. J. R. Crane, who shot three examples. "He stated that the weather, which had been very stormy for some days, was so wild on this occasion, with hail-showers, that it was difficult to keep his boat clear of water. At Long Island, about five miles south of Athlone, three successive flocks of these Skuas, consisting of twenty or more in each flock, passed over him, following the course of the Shannon northward, and showing no disposition to alight." (*Vide* also Proc. Dubl. Nat. Hist. Soc., February 7th, 1862). It is interesting to note that, as pointed out by Mr. Ussher, of the four British Skuas, only two examples (in each case a Long-tailed Skua) have been taken in the first quarter of the year in Ireland. One was procured in Wexford, on January 2nd, 1875, by Mr. G. H. Kinahan, the other on March 1st, 1846, in Tramore,

¹ A fine male specimen was obtained on the hills at Morvern, in Argyll, on June 6th, 1906 (H. Bisshopp, Ann. Scot. Nat. Hist., 1906, p. 186).

² Recently, viz., on October 19th, 1903, one was obtained at Axbridge, in Somerset, after a severe gale (Stanley Lewis, 'Zoologist,' 1904, p. 461).

co. Waterford (Thompson). The most recent capture from inland counties appears to be that of an immature bird taken in co. Armagh, in August, 1898; while Mr. Barrington received "a beautiful adult specimen" from Clare Island, co. Mayo, on June 14th, 1906 ('Irish Naturalist,' 1906, p. 193).

Flight.—This species is as swift and buoyant on the wing as its larger congeners, and moves through the air gracefully. When in pursuit, its flight is glancing, indeed when pressed with hunger it will precipitate itself with a great swoop into a flock of Gulls, and singling one out, will follow it untiringly until its food is disgorged.

Food.—The smaller Gulls and Terns are swiftly pursued until they are forced to eject the contents of their stomachs, which the Skua greedily swallows. But away from the tide, other than sea-birds are not exempt from this tormentor. For example an immature Long-tailed Skua was shot on one of the co. Waterford mountains, on October 14th, 1881, when endeavouring to pounce like a Falcon on Golden Plovers (Ussher).

Lemmings are perhaps the favourite diet, and the bird may be found breeding abundantly where an ample supply of these little animals is to be had. But many forms of invertebrate creatures are also devoured. Thus Mr. Saxby found a few small beetles and vegetable matter like tops of heather in the stomach of an adult male in full plumage, obtained on May 24th, 1900, in the Shetlands ('Zoologist,' 1900, p. 281).

Stevenson recalls a male shot at Breydon in October, 1890, which vomited several live earthworms ('Birds of Norfolk'). In addition birds, crabs, shrimps, and other marine creatures are consumed, while crowberries are eaten in summer by the young.

Voice.—The note is rather loud and shrieking and is chiefly heard when the nesting-preserves are trespassed upon.

Nest.—The nest is represented by a mere shallow depression on the heath-clad moor-land. The eggs, two in number, have a rather olivaceous ground-tint, passing to various shades of green, blotched and scrolled with darker markings.

At its nesting-haunts this species shows great courage. It will approach with rapidly-beating pinions, and almost dash into the face of man, dog, or other trespasser.

Geographical distribution.—This Skua, circumpolar in its breeding-range, confines itself to the higher latitudes

of Arctic Europe,¹ Asia, and America: unlike the Arctic Skua, it is only a visitor to the Faroes and Iceland. Its migratory range in winter extends to Southern Europe, and to latitude 40° N. on the Atlantic side of America, and 20° N. on the Pacific side.

DESCRIPTIVE CHARACTERS.

PLUMAGE.² *Adult male nuptial.*—Top of head, upper half of cheeks, and back of neck, brownish-black; lower cheeks and rest of neck, buffish-yellow; back, scapulars, and long central tail-feathers, of a greyer shade than those of the Arctic Skua; wings (including primaries), and lateral tail-feathers, dark brown; lower throat and breast, white; abdomen, greyish-brown.

Adult female nuptial.—Similar to the male plumage, but the central tail-feathers are shorter.

Adult winter, male and female.—Similar to the nuptial plumage, but with a tendency to striations on the flanks, and on the upper and under tail-coverts, in birds not quite mature.

Immature, male and female.—Barred on the back, wings, breast, abdomen, and tail-coverts, with greyish-brown and white. The young of the first year vary in tint, especially about the abdomen. They are greyer and less rufous than examples of the Arctic Skua. The readiest distinction between the two species at any age is to be found in the shafts of the primaries. Thus in the Arctic Skua these are *all white*, whereas in the Long-tailed Skua they are *all brownish save the two outer on either side* (Saunders).

BEAK. Dark horn-colour.

FEET. Greenish-grey; toes black; webs of young, parti-coloured, being darker near their extremities.³

IRIDES. Dark brown.

¹ Breeds abundantly during some seasons on the Fells of Lapland, where it preys mainly on Lemmings.

² In the 'Ibis' for 1865, p. 217, Professor Newton describes an instance of dimorphism in this species, though normally it is very much less marked than in the last-named bird.

³ The webs in the young of the Arctic and of the Pomatorhine Skuas are also parti-coloured.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	23	in. ¹
WING	...	...	...	11·9	„
BEAK	...	..	...	1·5	„
TARSO-METATARSUS	...	...	...	1·8	„
EGG	...	...	...	2 × 1·5	in.

¹ Including the long tail-feathers, which may project 8·5 in. in the male, and 7 in. in the female.

Order ALCÆ.

Family ALCIDÆ.

Sub-Family ALCINÆ.

RAZORBILL. *Alca torda* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 47; Dresser, 'Birds of Europe,' vol. viii, pl. 619; Lilford, 'Coloured Figures,' vol. vi, pl. 36.

The Razorbill¹ figures prominently in the bird-life on our cliffs during the spring and summer months. There, in suitable localities, thousands assemble to take up their breeding-quarters, returning with their offspring to the water in early autumn, to lead a wandering pelagic life. In winter, this Auk and other common members of its kind are little seen around our coasts, as they are scattered far and wide over the surface of the deep.² After tempestuous weather, numbers are washed ashore.

I have records of finding Razorbills every month in the year along the Irish coast. Some, notably those taken after a rough winter's storm, were in an emaciated condition, but still showing a flicker of life; others were plump and, on examination, proved to have met their death by violence.³

¹ This and other Auks are known in popular language as 'Divers,' or 'Penguins,' but with the true Penguins of the Southern Oceans they have no anatomical affinities.

² In autumn, old and young are numerous round our coasts, but in winter, it is chiefly the young that keep near land, especially in stormy weather.

³ Formerly, when large paddle-steamers were in vogue, I have repeatedly seen Razorbills, Guillemots, and Puffins, dive in front of the bow and rise just astern of the paddle-wheels, with wings and legs broken. The birds fluttered and tumbled on the water, where, unable either to rise or dive, they had to run the gauntlet of being torn to



RAZORBILL.
Nuptial plumage.

Auks are endowed with remarkable diving-powers; they use their wings under water, not simply as a fish uses its fins for steering-purposes, but by means of rapid vibrations, as powerful propelling organs. In fact these birds may be said to fly under water. When swimming or resting on the surface, the Razorbill erects its little pointed tail, a mark by which it can be distinguished from the Common Guillemot at a fair distance with the aid of a good field-glass. But even with the unaided eye, their distinctive characteristics can usually be made out, as, unless the birds are much molested, they are not notably shy. Only occasionally is the Razorbill met with on fresh water, though violent storms will drive numbers far inland.

Flight.—Considering the bulky and rather heavy build of this species, its flight is swift and at times even buoyant; the wings, though small, are strongly-framed and the flight-feathers are tough and well-pointed.

‘Wisps’ of Razorbills may be seen skimming along the waves and then ascending several hundred feet into the air; these movements may be observed in mid-channel, but the flight is best studied as the birds ply to and fro between cliff and sea.

From the top of a lofty headland I have seen them stay their flight and actually hover momentarily during descent with their wings almost meeting over their backs, reminding one of the pose of domestic pigeons about to alight on a house-top or other building.

Voice.—The voice, heard for the most part at the breeding-colonies, resembles a softly-produced and rather mournful grunt; the young utter a plaintive, mellow, kitten-like mew, when they first reach the water, especially when their parents dive from out their sight.

Food.—The Razorbill, like all Auks, is decidedly pis-

pieces by the larger Gulls and Skuas, dashed against the rocks, or, escaping such violent measures, being left to linger wave-tossed on the sea, until the tide determined their course and deposited them, dead or in a dying state, upon the beach, where their remains were quickly disposed of by rats, gulls, and other scavengers. It seems evident that these Auks, on descending below the surface of the water, encountered the tremendous vortex produced by the paddle-wheels, amid the spokes of which they became entangled, and their rapidly-moving wings and legs were fractured ere they could manage to free themselves from this boiling eddy. Such bird-fatalities have been greatly diminished since the introduction of screw-steamers, the birds swimming alongside the vessel, being able to dive without apparently encountering injury.

civorous, and sprats, carried diagonally in the beak, form the principal diet; I have also found abundance of crabs and shrimps in the stomachs of birds dissected.

Nest.—During the month of March and the first part of April, Razorbills assemble at their breeding-homes on the cliffs. While abundant on many of the British headlands, this species is, perhaps on the whole, less numerous than the Guillemot, though in Ireland the breeding-places appear to be more numerous. With the Guillemot the Razorbill may be found in certain proportions, breeding on the bare faces of sheer, beetling cliffs, but, unlike the former, it resorts to the shelter of nooks, overhanging ledges, and less frequently to burrows. Vast colonies are usually formed in company with other sea-birds; yet small groups, and even odd pairs, breed in some districts at distances apart. A single egg, disproportionately large for the size of the owner, is laid towards the end of May. The ground-colour varies from white to creamy-brown, boldly blotched, streaked, and even zoned, with brown shading to purplish-black. Unlike the egg of the Guillemot, a light bluish or greenish ground-colour of the shell is very uncommon; yet curiously enough the lining-membrane, seen when the empty shell is held up to the light, appears green, whereas that of the Guillemot is light yellowish.

Both sexes incubate in turn, the male feeding the female when thus engaged. When hatching, the bird sits *along* not *across* its bulky egg.

It is interesting to observe the way in which the parents convey their offspring to the sea before the latter are able to fly. This may be witnessed best about the last week in July. The birds then begin to leave the cliffs, and the young are apparently roughly treated, being jostled and pushed off their ledges; yet their fall is so broken as they tumble and scramble down the face of the cliff that they generally reach the water in safety.¹ Indeed, the few which get injured in this way form an exceedingly small proportion of the numbers which might forfeit their lives to Falcons and other enemies, during their parents' absence at sea, were they to remain longer on the cliffs.

It is amusing to watch the bewildered expression of the

¹ I have not seen the parent seize the offspring by its neck and carry it down to the water, though this habit has been vouched for by some observers.

youngsters when they receive their first ducking in the briny deep. I have heard them crying in piteous accents for their fond parents, who, out of their sight in the depths beneath, were diligently pursuing fish to feed them. Soon the young, however, acquire a knowledge of diving, and with a certain air of independence, follow their parents far out to sea. It has been observed that sometimes the old bird will dive, directly the young one reaches the water and come up under its offspring, which, hoisted on the parent's back, sits securely there, until carried out to sea (E. M. McCarron).

Geographical distribution.—Abroad, the Razorbill breeds in the Faroes, Iceland, Scandinavia, and other countries of Northern and Temperate Europe, as high as lat. 71° N., and southward to Brittany. Eastward its breeding-grounds do not extend to Asia, but westward they reach Greenland and the eastern sea-board of Canada. In winter it is found scattered over the European Seas, including the Mediterranean, and in large numbers in the North Atlantic Ocean, down to lat. 30° N.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, hind-neck, back, scapulars, and upper tail-coverts, glossy greenish-black; sides of face, chin, and throat, brownish-black; fore-neck, breast, abdomen, and under tail-coverts, white; primaries, dark brown; secondaries, dark brown, tipped with white, forming a narrow alar bar; tail (of 12 feathers), dark brownish-black and wedge-shaped; a thin white line extends from the base of the beak to the front of the eye.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Cheeks, chin, throat, front of neck, and sides of the head behind the eye, white; the narrow white stripe between the beak and the eye is absent; scapulars and feathers of the back, only faintly glossed.

Immature, male and female.—Resembles the adult winter-plumage, but the white line from the beak to the eye is very indistinct.

BEAK. Black; rather deep and laterally compressed, and exhibiting a large distinct white transverse furrow and several smaller ones in front of it near the tip. The beak of the immature bird is smooth and shallow.

FEET. Black; no hind-toe.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	17 in.
WING	...	...	...	7·3 „
BEAK	...	...	...	1·3 „
TARSO-METATARSUS	...	...	...	1·25 „
EGG	...	...	...	2·9 × 1·9 in.

GREAT AUK. *Alca impennis* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 46; Dresser, 'Birds of Europe,' vol. viii, pl. 620; Lilford, 'Coloured Figures,' vol. vi, pl. 37.

About sixty years ago, the last recorded surviving specimen of the Great Auk, also known as the Gare-fowl, was killed off the coast of Iceland. Since then, there has been no substantiated evidence of its existence, though the bird has been looked for in many lands by zealous ornithologists, and there seems to be not the least doubt that it is now totally extinct. It would appear that it had already become scarce in our Islands for more than half a century before its complete extirpation.

Very interesting accounts have been given by writers who were acquainted with the habits of this strange bird which in some countries was once common, even plentiful.¹

There are but three well-authenticated British-taken specimens on record:—One obtained by Bullock in 1813, from Papa Westray in the Orkneys; this, an adult male, is now in the British Museum. Another was captured alive on St. Kilda, and received by Fleming in August, 1821 or 1822. A third was taken alive near Ballymacaw, several miles from the mouth of Waterford Harbour² in May, 1834. This specimen, an immature female, is now preserved in the Museum of Zoology, Trinity College, Dublin.

¹ A vast amount of literature has been written on the habits of the Great Auk, dealing also with questions on extirpation, the finding of its remains, its former geographical distribution, &c., &c. A valuable and exhaustive reference of the chief works on this subject is to be found in a footnote in Prof. Newton's 'Dictionary Of Birds,' pp. 308-309.

² According to Mr. Ussher's account, this specimen was not taken at the mouth of Waterford Harbour, but several miles west of it,

Mr. Saunders states that "no other British specimens are in existence; but Mr. Henry Evans, during his visits to the St. Kilda group, has collected strong evidence that about 1840 a bird was secured on the grassy slopes of Stack-an-Armin, and was killed three days afterwards as a witch, in consequence of a storm which frightened its captors. Remains have been found in Caithness, Argyllshire, some old sea-caves in Durham, and latterly in several districts of Ireland," especially near Waterford"; and on the coasts of Antrim (figs. 56 and 57).

Concerning its general habits, it may be remarked that the Great Auk was absolutely unable to rise on the wing,

close to the cliffs between Ballymacaw and Brownston Head. It had been previously observed swimming about the locality by a man named David Hardy. A fisherman named Kirby easily captured it by enticing it with sprats thrown near his boat, and finally succeeded in securing it in his landing-net. The bird lived in captivity for four months, though apparently in a semi-starved condition when first obtained. Refusing its food at first, potatoes and milk were forced down its gullet, after which it fed freely. Fish, preferably trout swallowed entire, was its chief diet. The bird assumed a very stately, erect attitude, had a strange habit of shaking its head, especially when food was offered it, and is said to have been rather fierce. It died on September 7th, 1834, and was presented by Dr. Burkitt to the Museum of Zoology, Trinity College, Dublin, in 1844.

³ Bones of the Great Auk were obtained at Whitepark Bay, co. Antrim, with human remains believed to be those of the earliest Neolithic inhabitants of Ireland. In the accumulations of the same age the bones of horses, dogs or wolves, geese, ducks, and gulls, were found, together with stone-hammers, flint-flakes, and edible shell-fishes. The Great Auk in those remote ages appears to have been a common species about this and other parts of the Irish coast. (G. E. Barrett-Hamilton, 'Irish Naturalist,' 1896, p. 121. *Vide* also W. J. Knowles' 'Third Report on the Pre-historic Remains from the Sand-hills of the Coasts of Ireland,' Proc. Royal Irish Acad. (3), vol. iii, No. 4, pp. 650-663, December, 1895, and vol. i, No. 5, 1891, *ibid*, also 'Irish Naturalist,' 1899, p. 4.)

Mr. Ussher obtained several Great Auks' bones from the kitchen-middens on the Waterford coast. They were identified beyond doubt by Prof. Newton and Dr. Hans Gadow, of Cambridge. Many of these bones were found on or near the old surface where this cropped up, and with them were associated bones of domestic animals, fowl, and Red deer. Burned stones, layers of charcoal, and shells, were also present. Mr. Ussher mentions finding remains of no less than six Great Auks in the same group of sand-hills, which seems as though numbers of the birds were consumed as food ('Irish Naturalist,' 1897, p. 208, also 1899, p. 1, *ibid*.). Quite recently Mr. Ussher records finding more Auks' bones on the coast of co. Clare; other objects found there were burned pot-boilers, sand-stone slabs used for hearths, multitudes

and so, out of water, was in many ways a helpless creature. Except when it assembled in numbers to nest, it was as aquatic as a Penguin, its aborted wings (Plate LI., figs. 1 and 2), functionless as regards flight, being admirably adapted to propel it swiftly for long distances under water.



FIG. 55.—GREAT AUK.

of shells, bones of domestic animals, and horns of Red deer. As in the former instance these relics were found on the surface between the sand-hills ('Irish Naturalist,' 1902, p. 188).

These Auks' remains have been liberally presented to the Museum of Science and Art, Dublin, and the Museum of Zoology, Cambridge. Though yielding bones of the Great Auk, yet the coast of Waterford is not fringed with any large islands where this bird might have bred: but Mr. Ussher remarks, "Sixteen miles from Tramore Bay are the low Keeragh Islands, eminently suited for such a bird to breed on; and the incursions that the sea has made along the Waterford coast, . . . may well have washed away any low flat island that existed in Tramore Bay."

From these discoveries it will be seen that the geographical range of the Great Auk as far as Ireland is concerned extended nearly down to lat. 52° N.

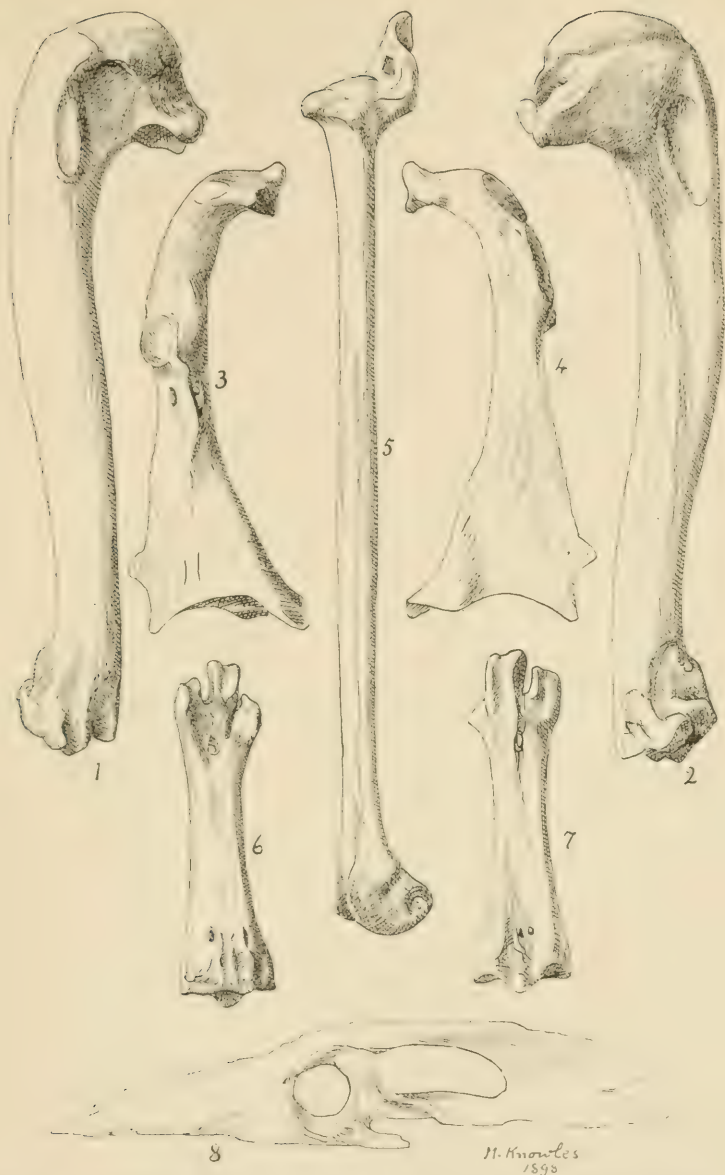


FIG. 56. BONES OF THE GREAT AUK FROM KITCHEN-MIDDENS ON THE COAST OF Co. WATERFORD. (Nat. size.)

- | | |
|--|---|
| (1) Left Humerus. Posterior surface. | (6) Right Tarso-metatarsus. Posterior surface. |
| (2) " " Anterior " " | |
| (3) " Coracoid. Posterior " " | (7) Right Tarso-metatarsus. Anterior surface. |
| (4) " " Anterior " " | |
| (5) Right Tibio-tarsus. Outer surface. | (8) Left Innominate. Outer surface (imperfect). |



FIG. 57.—BONES OF GREAT AUK FROM WHITEPARK BAY,
Co. ANTRIM. (Nat. size.)

- | | |
|---|--|
| (1) Left Humerus. Outer surface. | (7) Phalanges. |
| (2) „ Ulna. „ „ | (8) Right Scapula. Upper surface. |
| (3) „ „ Inner „ | (9) Left Coracoid. Inner „ |
| (4) „ Radius. Upper „ | (10) Right Tibio-tarsus. Anterior sur-
face. |
| (5) „ Metacarpus. Anterior sur-
face (slightly imperfect). | (11) Right Femur. Anterior surface
(imperfect). |
| (6) Phalanges. | |

Food.—The Great Auk appears to have subsisted almost entirely on fish, which were swiftly pursued and captured under water.

Voice.—The voice has been described as a low croak.

Nest.—When about to breed, large numbers of these birds assembled on marine islands, where each deposited and hatched its single egg on a ledge close to the sea-mark. In colour the egg is rather impure white, streaked, blotched, and sometimes scrolled with brown, shading to purplish-black at the larger end (Plate LIII.) : in some of the eggs a green tinge is manifest. Judging from the quantities of remains which have been discovered, it is probable that this species formerly bred in considerable numbers in the British Islands, but the evidence which has been furnished to show that it survived as a breeding-species until early in the nineteenth century, has been refuted by competent authorities.

Geographical Distribution.—Abroad, the Great Auk bred in the northern limits of Temperate as well as in Sub-arctic climes. In Europe its breeding-haunts were along the shores and small islands surrounding Iceland, also on the Faroes, the Norwegian and Scandinavian coasts. In the Western Hemisphere it was once plentiful in Greenland, and more especially on Funk Island off Newfoundland. It also bred on the coasts of Labrador.

In autumn and winter, it inhabited the North Atlantic Ocean "and was recorded by Catesby from the waters of Carolina in winter" (Saunders).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, hind-neck, back, scapulars, upper wing- and tail-coverts, glossy-black; sides of head, chin, and throat, brownish-black; primaries and tail (of 14 feathers), dull black; secondaries, brownish-black, edged with white forming an alar bar; middle of fore-neck, breast, abdomen, and under tail-coverts, white; large white patch in front of the eye.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Chin, throat, and sides of the head, white, otherwise similar to the nuptial plumage.

Immature, male and female.—Resembles the adult winter-plumage.

BEAK. Black; rather deep, greatly compressed, with

oblique furrows eight or more in number which meet at the edges.

FEET. Black, short, and placed very far back.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	32	in.
WING	...	...	...	4.25	„
BEAK	...	...	...	3.5	„
TARSO-METATARSUS	...	...	...	2	„
EGG	...	...	...	4.9	× 2.7 in.

DESCRIPTION OF THE GREAT AUK IN THE MUSEUM OF ZOOLOGY, DUBLIN UNIVERSITY.

PLATE LI., FIGS. 1, 2. PLATE LII., FIGS. 1, 2.

Though rather poor in plumage, this specimen is particularly interesting, as it claims to be the only known mounted example in immature plumage in existence. The state of captivity to which the bird was subjected for some months prior to its death, was evidently not conducive to keeping the plumage in good condition, and it may also be remarked that the moulting period was passed through in captivity.

Top of head, dark brown; back and sides of head behind the eye, lighter brown; oval patch in front of eye, white, mottled with brown; lower part of face, impure white, mottled with brown; chin, mottled dark brown and white, brown predominating; middle line of throat, chiefly white; sides of throat, dappled with white and brown, like the lower part of the face; lower throat, breast, abdomen, and under tail-coverts, dirty white; back of neck, mid-back, and lower back, brown, the last darker in shade, merging into the blackish-brown colour of the rump and upper tail-coverts; tail-feathers, brownish, frayed and broken, their basal three-fourths only being preserved; thighs show some brown feathers; scapulars and inner secondaries, blackish, and only faintly glossed; outer secondaries, brownish, edged with white, forming a wing-bar; primaries, light mouse-brown, many of them broken, and with frayed edges; lesser wing-coverts, greyish-brown, edged with deeper brown;



Fig. 1. Right profile view.

GREAT AUK.

Assuming the winter plumage. (Immature female.)

Photographs of the specimen in the Museum of Zoology, Dublin University.

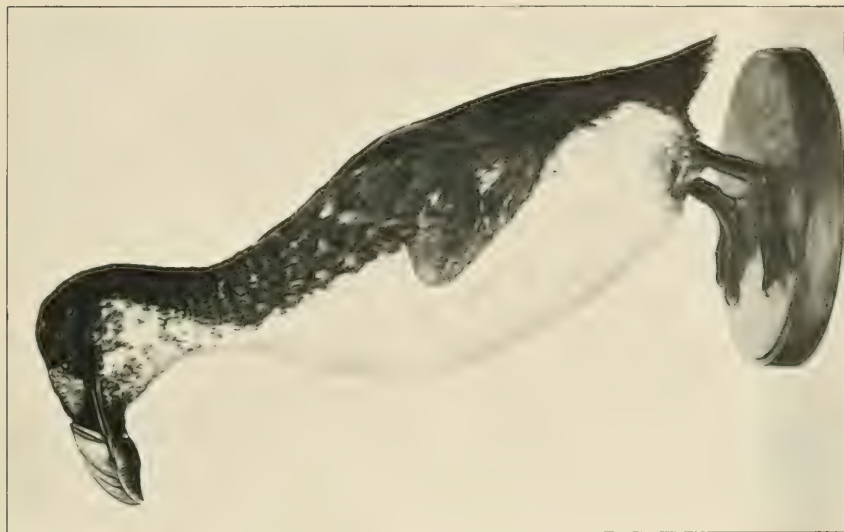


Fig. 2. Left profile view.

greater wing-coverts, brownish, edged with blackish-brown; axillaries and under wing-coverts, dirty white, washed with dull buff or mud-brown colour. The bases of the brown feathers are for the most part lighter than the tips; feathers of the middle of the back very ruffled from the moult and many missing; the down of the breast and abdomen, whitish, that of the upper parts, light brown.

BEAK. Blackish-brown; on either side of the upper segment are five furrows, of which four are close together near the tip, the remaining one near the base being separated by an interval; on either side of the lower segment are ten shorter furrows, all close together near the tip; on the left side the two most distal furrows are feebly marked; lower border of the under segment somewhat sword-shaped; whole beak, laterally compressed, the culmen being sharp, narrow, and strongly curved downwards; the point of the upper segment does not project beyond that of the lower. The beak gapes slightly. The nasal openings, which are linear, are almost hidden from view by a dense covering of short feathers.

FEET. Blackish; some of the scales of each tarso-metatarsus being chipped and worn; toe-nails, moderately sharp; middle toe-nail, slightly curved outwards.

IRIDES. Light yellowish-brown, or almost deep orange in shade.

MEASUREMENTS.

TOTAL LENGTH.	From top of head to tip of tail	23	in.
"	Chin to tip of tail	22	"
HEIGHT (standing)	...	23	"
BREADTH.	Across middle of back	13	"
"	Across middle of breast	10	"
TIP OF BEAK TO OCCIPUT	...	7.75	"
CHIN TO OCCIPUT	...	4.25	"
FRONT OF EYE TO BASE OF BEAK	...	2.25	"
BACK OF EYE TO OCCIPUT	...	2.25	"
DIAMETER OF ORBITAL OPENING	...	0.5	"
LENGTH OF WING	...	5	"
EXPANSE OF WING.	Carpal joint moderately folded (see Plate LI.)	4	"
CARPAL JOINT TO TIPS OF SECONDARIES	...	3	"
RECTRICES (tips of most feathers worn off)	...	3	"
BEAK.	Upper margin (culmen)	3.5	"

BEAK.	Lower margin	...	...	...	...	2 in.
„	Greatest depth from culmen to lower border	...	...	...	...	1.75 „
„	Distance from proximal furrow on upper segment to the nearest of the distal series	...	...	...	...	1 „
„	Gape of mouth to tip of beak	...	...	...	...	4.35 „
„	Median sharp ridge on lower margin of beak	...	...	...	...	0.5 „
TARSO-METATARSUS		...	...	...	...	2.75 „
OUTER TOE	...	...	...	...	...	2.5 „
MIDDLE TOE	...	...	...	...	...	3 „
INNER TOE	...	...	...	...	...	2 „
TOE-NAILS.	Middle and outer	...	...	...	...	0.5 „
„	Inner	...	...	...	...	0.35 „
GREATEST DIAMETER ACROSS WEBS		...	...	...	...	3.5 „

HOW THE GREAT AUK BECAME EXTIRPATED.

The literature dealing with the extirpation of this remarkable bird is indeed voluminous, and many are the different opinions held as to how the decrease in numbers began to set in. It seems hardly sufficient to say that because the largest of our Auks, or so-called 'Penguins' of the Northern hemisphere, was not endowed with the power of flight, it therefore was so handicapped in the fierce struggle for existence that it was unable to cope with its natural environment and so, becoming gradually reduced in numbers, at length disappeared as a living species. This *slow* process of extinction seems all the less likely when one considers the numbers of other flightless or feeble-flighted 'Divers' which, perforce, are periodically destroyed in multitudes by hurricanes, preyed upon by many enemies of the deep, swept from the rocks by volcanic and other seismic disturbances, and yet these species still exist, some in vast assemblages.

Were the Great Auk a polar-breeding species, its fate might have been far different, but selecting as it did low, flat islands in Temperate or, to a less extent, in Sub-arctic seas, its breeding-haunts were easily negotiable by whalers, fishermen, skin-traders, &c. It is important to bear in mind that the Great Auk was a large bird, hardly inferior in size to a goose, and so worth killing and salting down



Fig. 1.—HEAD OF GREAT AUK. Half natural size. (Right profile view.)



Fig. 2.—HEAD OF GREAT AUK. Half natural size. (Left profile view.)
Photographs of the specimen in the Museum of Zoology, Dublin University.

for food. It seems evident that it was through the active agency of Man, who made special raids on it, that this ill-fated bird was hurried to its doom; and, when the birds grew scarce as marketable commodities, it is certain that the last of the species were killed to supply the wants of museum and private collectors, and thus the bird became totally extinct.

That the Great Auk did not become scarce by slow degrees like many other now extinct creatures, is a fact well acknowledged by many ornithologists, and here I quote the words of Professor Newton on the subject:—"In Iceland there is the testimony of a score of witnesses, taken down from their lips by one of the most careful naturalists who ever lived, the late John Wolley, that the latest survivors of the species were caught and killed by expeditions expressly organised with the view of supplying the demands of caterers to the various museums of Europe.

"In like manner the fact is incontestable that its breeding-stations in the western part of the Atlantic were for three centuries regularly visited and devastated with the combined objects of furnishing food or bait to the fishermen from very early days, and its final extinction, foretold in 1792 by Cartwright (*Labrador*, iii. p. 55), was due, according to Sir Richard Bonnycastle (*Newfoundland* in 1842, i. p. 232), to the ruthless trade in its eggs and skin."

"No doubt that one of the chief stations of this species in Icelandic waters disappeared . . . through volcanic action, and that the destruction of the old Geirfuglasker drove some at least of the birds which frequented it to a rock nearer the mainland, where they were exposed to danger from which they had in their former abode been comparatively free; yet on this rock (*Eldey*=fire-island) they were "specially hunted down" whenever opportunity offered, until the stock there was wholly extirpated in 1844, and whether any remained elsewhere must be deemed most doubtful."¹

With reference to the disappearance of the Great Auk from Icelandic waters, Mr. Saunders gives the following summarised account:—"Off the south-west of Iceland, which has furnished the majority of the skins and eggs existing in collections, there were three skerries on which

¹ For a detailed and interesting account of this subject the reader is referred to the 'Ibis,' 1861, pp. 374-399; also to Grieve, "The Great Auk," &c.

it appears to have bred; one of these—the Geirfugla-skær near Reykjanes—disappeared during a submarine eruption in 1830, after the colony on it had been nearly extirpated; Eldey or the Meal-sack was systematically robbed until the last two birds were taken alive in June 1844; and there can now be no hope that a remnant may exist on the surf-encircled Geirfugla-drängur.”

Systematic invasions were made annually on the Great Auk between the sixteenth and eighteenth centuries off the North American coasts, especially those of Newfoundland where the bird was extremely plentiful.¹

Only some forty years after the American Continent was discovered, British as well as French traders visited the shores of Newfoundland, “driving the helpless and hapless birds on sails or planks into a boat ‘as many as shall lade her’ and salting them for provision.” Such slaughter was indulged in until the close of the eighteenth century. “In 1819, Anspach reported their entire disappearance, but it is possible that some few yet lingered” (Newton).²

COMMON GUILLEMOT. *Uria troile* (Linnæus).

Coloured Figures.—Gould, ‘Birds of Great Britain,’ vol. v, pl. 48; Dresser, ‘Birds of Europe,’ vol. viii, pl. 621; Lilford, ‘Coloured Figures,’ vol. vi, pl. 38; Booth, ‘Rough Notes,’ vol. iii, pls. 23, 24.

The swarms of Common Guillemots which resort to the stupendous cliffs of the British coasts in spring and summer, and which in most situations outnumber the other members

¹ It would appear that in Greenland the bird became very rare at a comparatively early date and as far back as 300 years ago was known only as a straggler.

² On Funk Island, their last resort, large numbers of bones and even mummified remains have been collected. The stone enclosures or ‘pounds’ into which the victims were driven before being slaughtered have also been found and described by several travellers long after the birds ceased to exist.

Mr. Ussher in his article, ‘The Great Auk, Once An Irish Bird’ (‘Irish Naturalist,’ 1899, pp. 1-3), embodies an extract from Lady Blake’s article, published in the ‘Victoria Quarterly’ for August, 1889, which details an account of the brutal treatment to which these unfortunate birds were subjected.



EGGS OF GREAT AUK.

Three eighths natural size.

Formerly in the possession of the late Lord Lilford.

of the Auk-Family, afford a spectacle most interesting and at the same time familiar to many. Like their congeners, these birds desert the cliffs in early autumn, at which season young and old betake themselves to the open sea.

Guillemots, especially when immature, seem unable to cope with raging winds and high seas, and large numbers are frequently destroyed and washed ashore after a hurricane. Such birds may be frequently found along the beach, but in addition one comes across not a few, victimised by the gun which can be proved by examination, in many cases being left by the 'sportsman' to die a lingering death on the waves.¹

Though differing in size, in the shape of the head and beak, in the colour of the back and wings, and in other external characters, from the Razorbill, the two species are much alike in their general habits of life, and in their movements.

Flight.—It is quite a common sight to see 'wisps' of Guillemots—perhaps a dozen or so together—flying with rapidly-beating pinions along the surface of the open sea; I have seen them settle and bunch together on the water, and then disappear under the waves almost simultaneously. At other times on alighting they scatter far and wide, appearing like dark dots riding on the breakers. The to and fro movement between cliff and sea is rapidly executed, yet this species appears to move less buoyantly in the air than the Razorbill, the wings of the former being smaller proportionately, and less strongly built than those of the latter. Under water the Guillemot can propel itself with great speed by means of its wings.

¹ It seems a pity that the Common Guillemot has become reduced in numbers on the English coast owing to the wholesale way in which it was persecuted annually, prior to the passing of the Sea-Birds Preservation Act (32 & 33 Vict. cap. 17). The slaughter which went on day after day during the breeding-season, "on the cliffs of the Isle of Wight, near Flamborough Head, and at such other stations frequented by this species and its allies the Razor-bill and Puffin, and the Kittiwake-Gull, as could be easily reached by excursionists from London and the large manufacturing towns, was in the highest degree brutal. No use whatever could be made of the bodies of the victims, which indeed those who indulged in their massacre were rarely at the trouble to pick out of the water; the birds shot were all engaged in breeding; and most of them had young, which of course starved through the destruction of their parents, intercepted in the performance of the most sacred duty of nature, and butchered to gratify the murderous lust of those who sheltered themselves under the name of 'sportsmen'" (Newton).

Voice.—The soft murmuring note is rather peculiar and not unmusical; it may be heard in a broken chorus at the breeding-stations. The piteous cry of the young is two-syllabled and sounds like *willock-willock*.

Food.—In autumn, between August and October, the adults, accompanied by their offspring, may be seen scattered over the sea at no great distance from the coast, following the 'schools' of small fishes upon which they mainly



FIG. 58.—COMMON GUILLEMOT.

subsist. Crabs are also taken in minor quantities. In November but few Guillemots are seen fishing near our shores, and by December the birds are probably scattered far and wide over the boundless main.

Nest.—Guillemots assemble on the cliffs much about the same time of year as Razorbills. Along the southern coasts of the British Isles they may appear as early as the first week in February; in the more northern districts they do not land at their rocky homes until a month or so later.

As already mentioned, it is on the exposed ledges of great perpendicular cliffs, also on the summits of huge rock-stacks, that multitudes mass together. Here these beautiful creatures present an imposing and picturesque spectacle. Their numbers, almost countless, are arranged, some as closely as a regiment at drill, others clustered into an irregular crowd at the summit of the stack, while low down, the face of the great headland appears more thinly populated. Many of the birds stand boldly upright, peering round at the approach of an intruder. The hatching females face the cliffs, giving one the impression that they are crouching to elude observation. Yet this attitude is far from expressing fear; indeed, no bird is calmer, sits more closely, or displays greater affection for its young, than the Guillemot. The parent-bird will suffer one almost to handle her rather than relinquish her dearly-loved offspring. It is to prevent the great solitary egg from falling off the platform, that the mother-bird assumes this peculiar pose: the pointed end of each egg is clasped between her legs and feet, and the larger end pressed firmly against her lower breast-feathers, too short almost to cover it.

Some of the ledges incline obliquely downwards, and on these especially the birds face the cliff. On less sloping platforms I have seen them sit sideways, and when the eggs are deposited on large, roomy, flat surfaces, many Guillemots may be seen hatching with their breasts facing the sea. The eggs often get smashed, especially in densely-packed colonies. Birds huddled closely together on adjacent ledges at times enter into conflict, and as they wax hot in the struggle for supremacy, an egg or two is sent tumbling down the cliff. A sudden alarm, such as the report of a gun, will so terrify the birds that they may quit the cliffs before stepping free of their eggs, which are sometimes carried a yard or so from the ledge before being dropped from under the feet of the owners.

I have seen some magnificent colonies of Guillemots around the Irish coast, but one of the finest is thus described by Mr. Ussher:—"The largest assemblage of Guillemots in Ireland is on the majestic limestone cliffs of Moher in Clare. These rise to 600 feet and their coastline is indented, huge bastions affording points from which the next cliffs can be viewed. Their faces are stratified in bands of unequal durability, and have thus been worn into deep seams, leaving covered shelves and ledges, of which the

vast bird-population takes ample advantage. This does not fall off at about 200 feet from the water, as at Horn Head, but covers the cliffs up to 500 feet. At this height the deeply-cut horizontal fissures are packed with a dense multitude of hatching Guillemots, which it requires careful scrutiny to inspect from the next cliff-top. These birds with Kittiwakes occupy also to its very apex that remarkable pinnacle which rises from an isolated base to some 200 feet near O'Brien's Castle. Its sides are all ledged in the lines of stratification, which are carried round the angles and, as it tapers, form lines of prominence round its shaft. It seems as if designed to hold the greatest possible display of bird life" ('Birds of Ireland,' p. 362).

The single egg, remarkably large for the size of the bird, is much elongated and pear-shaped. It varies in ground-colour as well as in other markings. Some examples are white, streaked and blotched with brownish-black; others present a beautiful bluish-green tinge marked similarly and exhibiting zig-zag ink-like scrolls. Less frequently they are suffused with rich chestnut-red as seen in some of those of the Razorbill. Lastly, blue or white eggs, devoid of markings, are not uncommon varieties. Incubation begins about the middle of May, and nestlings are seldom observed before the middle of June. During the process of hatching the shells generally become much soiled.

About the middle of July the young reach the sea, being pushed off the cliffs by their parents. After the first week in August the breeding-haunts are quite deserted. I have not seen the offspring transported to the water in the hollow of the parent's back, as has been stated by some observers. The young, on first reaching the water, remain on the surface crying like little Razorbills; soon, however, they learn to follow the old birds under the water.

Geographical distribution.—Abroad, the Guillemot breeds in the Faroes, Iceland, and over a large area of the coasts and islands of Northern Europe and the Arctic Ocean. In Temperate Europe it breeds in the Baltic Sea, on Heligoland, on parts of the coast of France, and eggs have been obtained from the Berlengas Islands, off Portugal (Saunders). The breeding-range on the American Continent extends from Greenland, Northern Canada, and Alaska, down to California and New England; and on the Pacific side to Japan. In autumn and winter the Guillemot inhabits the North Atlantic Ocean down to lat. 30° N., and abounds

in winter in the North Pacific Ocean, where a form with a stronger beak is to be found. It also frequents the seas of Europe in winter, and small numbers occasionally occur in the Mediterranean.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, hind-neck, back, scapulars, and wings, shading from greyish to brownish-black; cheeks, chin, throat, and fore-neck, dark sooty-brown; secondaries, brown, tipped with white, forming a short, narrow wing-bar; primaries, greyish-black with paler inner webs; tail (of 12 feathers), brownish-black; lower fore-neck, breast, abdomen, under tail- and wing-coverts, white; flanks, white streaked with grey.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Chin, throat, fore-neck, and cheeks, white; sides of head behind the eye also white, bounded below by a narrow post-ocular dark greyish-black band.

Immature, male and female.—Resembles the adult winter-plumage, except that the white on the sides of the head and fore-neck is mottled with dusky-brown.

BEAK. Blackish, lighter at the base of the lower segment.

FEET. Dark brownish-black behind and on both sides of the webs; front of the tarso-metatarsus and toes, brownish-white.

IRIDES. Brownish-black.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	18 in.	Female smaller.
WING	...	...	7.5 "	
BEAK	...	...	1.9 "	
TARSO-METATARSUS	...	...	1.5 "	
EGG	...	...	3.25 × 2 in.	

Allied Species and Representative Forms.—The Ringed or Bridled Guillemot is not a distinct species, and intermixes with thousands of the Common form. It is so named because its eyelids are margined with white, and there is a white stripe in the furrow behind them.

BRÜNNICH'S GUILLEMOT. *Uria bruennichi* (E. Sabine).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. viii, pl. 622; Lilford, 'Coloured Figures,' vol. vi, pls. 39, 40.

This Guillemot, abundant in the breeding-season over a vast area of the mainland and islands in the Arctic Ocean, also along the American sea-board of the North Atlantic¹ and in Behring Sea, is a very rare visitor to British waters; it resembles generally the Common species, from which, however, it may be distinguished by its superior size, stouter and deeper beak, and more curved and darker plumage on the upper parts.

Four authenticated specimens have been obtained in England as follows:—One, December 7th, 1894, at Scarborough (Harting, 'Zoologist,' 1895, p. 70, and Proc. Linn. Soc., January 17th, 1895); two, January 30th, 1895, at Filey (Grabham, 'Zoologist,' 1895); and one, January 12th, 1895, in Cambridgeshire (Tuck, 'Zoologist,' 1895, p. 70). It is interesting to note that three of the four birds were procured from the same neighbourhood along the Yorkshire coast, and that all were taken much about the same time. Thus it seems evident that a visitation consisting of several Brünnich's Guillemots frequented the seas of the east side of England in that particular season.

Three other specimens, probably British, have been recorded, viz.:—One from Caithness, once in the Sinclair collection at Wick; another sent from the Orkneys, found by Macgillivray among skins belonging to the late Mr. Wilson, janitor to the University of Edinburgh; a third from the mouth of the River Orwell, in Suffolk (Saunders).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head and back of neck, glossy greenish-black; back, scapulars, wings, and tail, darker black; sides of head, throat, and fore-neck, very dark sooty-brown; secondaries, edged with white, forming

¹ On September 3rd, 1906, I observed several birds which I believe were of this species, in the Gulf of St. Lawrence not far from the Straits of Bellisle. Among them were Puffins, Razorbills, and Common Guillemots. The birds swam quite close to the ship, and I kept them in view for several minutes with a powerful Zeiss prism-binocular.

a narrow alar bar; front of neck,¹ breast, abdomen, and under tail-coverts, white.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—The feathers of the throat, cheeks, and chin, are white, but this species “apparently does not assume the white patches on each side of the occiput” (W. R. Ogilvie-Grant, Cat. Birds Brit. Mus., vol. xxvi, p. 579).

Immature, male and female.—Resembles the adult winter-plumage.

BEAK. Black with a white line without feathers² along the lower edge of the upper segment (*tomia maxillary*) from the nostrils to the gape.

FEET. Brownish.

IRIDES. Dark brown.

EGG. Thicker and blunter than that of the Common Guillemot, but very like it in markings : clutch, one.

AVERAGE MEASUREMENTS.

TOTAL LENGTH ...	...	19	in.	Female smaller.
WING ...	...	8.25	„	
BEAK ³ ...	...	1.75	„	
TARSO-METATARSUS	...	1.5	„	
EGG ...	...	3.25	× 2 in.	

BLACK GUILLEMOT. *Uria grylle* (Linnaeus).

Coloured Figures.—Gould, ‘Birds of Great Britain,’ vol. v, pl. 49; Dresser, ‘Birds of Europe,’ vol. viii, pl. 623; Lilford, ‘Coloured Figures,’ vol. vi, pl. 41.

The Black Guillemot, a bird of rather local distribution, differs from other British Auks in many of its habits.¹ Far from being gregarious, it is seldom seen, even about its

¹ The white in front of the neck terminates in a point, whereas in the Common Guillemot the white meets the brown in a rounded arch.

² In the Common Guillemot this part of the edge of the upper segment of the beak is concealed from view by short dense feathers.

³ Beak of immature bird much smaller.

⁴ By some systematists this bird has been separated from the other Auks, and has been placed in the Genus *Cephus* (Saunders).

breeding-haunts, in large numbers, and in midwinter it is much more partial to the sheltered waters of bays and creeks, and in a less degree to tidal rivers, than to the wide expanse of oceanic waters. During the winter months single birds or small parties may be observed swimming close to the shore, but I have very rarely known of storm-driven examples being picked up dead on the beach. Another distinguishing feature of the Black Guillemot is its plumage-marking. Even at a distance on the water the general sooty-brown colour and bright white patch on the wing are very noticeable: the winter-garb,¹ however, and that of the immature bird conform more to the Auk type of plumage. Again, the Black Guillemot, alone among British Auks, hatches more than one egg at a time, and her young remain in the nesting-hole until they are able to fly.

This species is most numerous in the northern portions of the British Isles. It may be regarded as plentiful in the large Northern and Western Island-Groups, becoming less so along the eastern sea-board.

On the English coast, especially in the south, also in Wales, it is comparatively scarce.

In Ireland it is met with most frequently along the north and west coasts, resorting in spring and summer to the wild rocky shores washed by the Atlantic.

Flight.—On the wing the Black Guillemot travels with rapidly-beating pinions, and it may be seen also scudding along the sea with its feet dangling and striking the water. Like other non-gregarious birds it approaches its nest cautiously from fear of being detected, so that its to and fro movements between cliff and sea cannot be studied with the same ease as in the case of its congeners.

Voice.—The cry is much more audible at a little distance than that of either the Razorbill or Common Guillemot; the note is plaintive and highly-pitched.

Food.—This consists of small fish, crabs,² and other marine creatures. It would appear that the Black Guillemot often dives and ascends almost perpendicularly; I have frequently observed it rise close to the spot where it first descended.

¹ Except that of very old birds which retain the dark plumage throughout the year (*vide* DESCRIPTIVE CHARACTERS).

² In the stomachs of several Black Guillemots which I collected off the west coast of Ireland in April, 1900, I found the remains of various species of crabs which Mr. E. Holt very kindly identified as follows:—

Nest.—Early in April this bird seeks for its breeding-quarters, the quietude of rock-fissures in cliffs of very varying altitudes, though never at a great height above the sea-level. It keeps apart from the throngs of Common Guillemots, Razorbills, and Kittiwakes, nevertheless, I have seen all four species breeding within the confines of one small island. I have found the nesting-cavity in a deep hole at the base of a cliff only a few feet above the sea-level. This Guillemot also breeds under masses of loose stones, especially on low, flat islands, I have records of odd pairs nesting on the mainland of the Dublin coast, as well as on Lambay Island and Ireland's Eye, though along the east side of Ireland it breeds but sparingly.

Colonies, strictly speaking, are not formed; yet in very favoured localities—such as along the Galway coast—where the great solid rocks are freely fissured, several pairs may be found breeding in close proximity. The eggs are laid in May and are two in number. The ground-colour is white; in some specimens very faintly shaded with bluish-green, and the blotches vary from light to dark brown.

Both sexes incubate.

The young quit their nest about the middle of July and appear to be sufficiently matured to look after themselves almost as soon as they take to the water. According to some observers the parent-birds continue to feed them for some time afterwards.

In an adult male were remains of *Portunus arcuatus* (a swimming crab), some of these creatures being almost entire: the largest measured 14 mm. across the carapace (body-shell), the smallest 10 mm., also fragments of larger crustaceans too broken up to allow of identification: several pieces of *Lithothamnium* (a stony weed) were present.

The stomach of an adult female contained the greater part of a Hermit-crab (*Pagurus bernhardus*), with no shell surrounding it and with one of the large claws missing, probably pulled off, as the bird tried to extract the crab from its shell. *Portunus* was also found, the largest carapace measuring 17 mm.

The stomach of another adult female contained *Paguridae*, several forms of *Brachyura*, and remains of other unidentified crustaceans. The gizzard of a young male contained *Portunus arcuatus* in large quantities, also the claw of a Pagurid, the claw of *Procellana longicornis*, and the remains of *Galathea squamifera*. All these birds were obtained from the same locality, viz., Ballynakill Bay, co. Galway, and on the same date, April 13th, 1900. I was surprised to find no fish present in the stomachs, and from the nature of the food it seems obvious that these Guillemots must have descended to a considerable depth to pick the creatures from the floor of the sea or from submerged rocks.

Geographical distribution.—Abroad, the Black Guillemot breeds on the Faroes, Iceland, and the coasts of the Continent of Northern Europe as far east as the White Sea. Along the Atlantic sea-board of North America it is found nesting from South Greenland to Newfoundland; on migration in autumn and winter it inhabits the North Atlantic and the Seas of Europe as far south as about lat. 40° N.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—General plumage very dark brownish-black displaying an iridescent hue of rich glossy greenish-purple and a large pure white patch on each wing; basal portion of inner webs of primaries and secondaries, also the under wing-coverts and axillaries, white; tail consists of twelve feathers.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Top of head, white, streaked with black; back, scapulars, and upper tail-coverts, barred with black and white; rump, nearly white with a few streaks of greyish-black; throat, front of neck, chin, cheeks, breast, and abdomen (as in other Auks), white; though in the Black Guillemot this colour is less pure. "As age advances the white winter plumage is less completely assumed, *very old examples remaining in black plumage throughout the year*" (W. R. Ogilvie-Grant, Cat. Birds Brit. Mus., vol. xxvi, p. 583).

Immature, male and female.—Resembles the adult winter-plumage, but there is only very faint barring of white on the back, scapulars, and upper tail-coverts; the white patch on the wing-coverts is splashed with brown. Birds in their second spring assume dark plumage like the breeding-dress, but retain the brownish patches on the white wing-coverts.

BEAK. Black; inside of the mouth vermilion-red.

FEET. Vermilion-red.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	14 in.
WING	...	...	...	6·5 "
BEAK	...	...	...	1·5 "
TARSO-METATARSUS	...	...	...	1·25 "
EGG	...	...	...	2·3 × 1·5 in.

Allied Species and Representative Forms.—*U. mandti*, an Arctic form, with 12 tail-feathers, with the bases of the feathers forming the wing-patch, pure white, and the black with a distinct green tinge, is common in the waters of Spitzbergen, Novaya Zemlya, Franz Josef Land, Arctic Siberia and round to Behring Sea. *U. columba*, with 14 tail-feathers, and a black V-shaped bar on the white wing-coverts, frequents the latter waters, while *U. carbo*, with 14 tail-feathers and with no white on the wings, is found further south, extending its range to Japan in winter. *U. snowi*, an Eastern representative entirely black, or with narrow white tips to the wing-coverts, and 14 tail-feathers, ranges from Southern Kamtschatka to Japan.

LITTLE AUK. *Mergulus alle* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 50; Dresser, 'Birds of Europe,' vol. viii, pl. 624; Lilford, 'Coloured Figures,' vol. vi, pl. 42.

As a British species this sturdy little sea-bird is not plentiful, though it visits our seas with fair regularity in the winter months. It occurs chiefly in the north, less frequently down the eastern seaboard of England.

It visits the Welsh coast probably every winter, while in Ireland, many maritime counties, more especially in the north and west, bear records of its visits.

As in Great Britain so also in Ireland, unusually large numbers have been obtained after heavy storms, not only on the coast but on inland rivers and lakes.¹ As instances may be cited the hurricanes which raged in October, 1841,² and in the winters of 1893 and 1895. In the January of the last mentioned year, great numbers³ were taken in Great Britain and in Ireland.

¹ According to Mr. Ussher the Little Auk has been obtained twice on each of the following waters:—River Shannon, Lough Erne and Lough Neagh.

² After this gale specimens were secured in two inland counties, viz., Kilkenny and Queen's Co. (Ussher).

³ On the Norfolk coast alone Mr. A. Patterson gives 302 as the numbers taken in January, 1895 ('Zoologist,' 1901, p. 297).

Stranded specimens washed ashore after storms, have been recorded; and Mr. Warren tells me that he has picked up several—some entire, others half devoured by gulls, rats, &c.—on the Sligo coast.

Of much greater rarity in our Isles is the occurrence of the Little Auk in full nuptial dress, of which we have the following substantiated records. Thompson mentions an occurrence in Ulster on May 22nd, 1846 (Nat. Hist. Irel.); one shot at Wells in Norfolk on May 26th, 1857 (Stevenson, 'Zoologist,' 1857); one picked up dead on the Solent in 1870, now in the collection of the late Mr. F. Bond; another at present in the Museum at Cambridge (Harting, Handb. Brit. Birds, 1901, p. 274); one obtained on Monach Island, one of the Outer Hebrides, where the bird is never common, on June 24th, 1893 (Ann. Scot. Nat. Hist., 1894, p. 55); and one received from Tory Island off Donegal, in May, 1895, by Mr. R. M. Barrington.

The Little Auk is the least in size of the Family to which it belongs: it is a neat little creature with snowy breast and dark glossy upper parts. At the same time it is very hardy and compactly built, well adapted for its rough seafaring life, and able to endure and to enjoy itself in the intense cold of high Arctic latitudes. American fishermen call it the 'Ice-bird,' for it is often seen in the neighbourhood of icebergs. Mr. Saunders mentions that when on board a steamer passing through the Gulf of St. Lawrence, he saw a flock of Little Auks as early as August 15th, 1884, and there was much ice in the Gulf, and on August 16th of this year I detected a few among numbers of Razorbills and Puffins when passing an iceberg in the same locality.

Flight.—If necessity arises this little bird can fly with considerable speed, but when frightened, as by an approaching vessel, it usually gets away by flitting along the surface of the water for a short distance like a Black Guillemot, and then suddenly disappearing from view by plunging into a wave. Under water it travels remarkably fast, and when it rises to the surface swims rather low.

Voice.—This species is said to be rather noisy, uttering a sound like *ällë-ällë*, from which its specific name is taken.

Food.—Small fishes, crabs, and other marine creatures, form the diet, and in autumn and winter Little Auks may be seen near fishing-vessels in quest of animal offal. "Col. Feilden found nestlings just hatched on July 28th; and

subsequently noticed that the parents had their cheeks distended with a reddish substance, consisting of immense numbers of minute crustaceans, which were evidently intended as food for the young" (Saunders).

Nest.—In the spring season, as our cliffs are becoming tenanted by great throngs of allied species (Razorbills, Puffins, and Guillemots), the Little Auk deserts us for higher latitudes.

The single egg is usually laid in the recess of a sloping cliff (sometimes quite low down), in holes, and under stones; in other cases it is deposited on a headland hundreds of feet above the level of the sea. The egg is pale sea-blue in colour; in some examples indistinct reddish-brown spots and streaks are to be seen.

Incubation does not appear to become general until about the middle of June.

Geographical distribution.—This species ranges in the breeding-season in many countries of Arctic Europe, from Iceland eastward to Novaya Zemlya. In Spitzbergen, and as far as the drift ice at lat. 82° N., astonishing numbers assemble. Off Franz Josef Land Dr. Nansen observed it as early as February 25th, 1896 (Saunders). Westward the breeding-range extends from Greenland to the eastern side of Arctic Canada, where the bird abounds, though west of Baffin Bay, in Behring Sea, the Arctic regions of the Asiatic Continent, and in the Pacific Ocean, it would appear that it has not been traced.

In autumn and winter the Little Auk is distributed over the waters of the North Atlantic Ocean and North Sea, migrating south to about lat. 35° N.

Considering the enormous numbers of colonies and the countless throngs which compose them, it seems evident that the birds must scatter themselves over a vast area of oceanic water during their southern peregrinations in autumn and winter, for at such times they are never seen in anything like the numbers in which they congregate to breed.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, hind-neck, back, scapulars, wings, rump, and upper tail-coverts, glossy greyish-black; rest of head, sides and front of neck, chin, and throat, sooty-black; scapulars margined with

white; secondaries edged with white which forms a narrow alar bar; primaries, greyish-black; tail (of 12 feathers), similar in colour; lower neck, breast, abdomen, and under tail-coverts, white; over the eye is a small white patch.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Chin, lower portions of the cheeks, throat, sides and front of neck,¹ white; otherwise similar to the nuptial plumage.

Immature, male and female.—Resembles the adult winter-plumage, except that the feathers of the upper parts are not glossy.

BEAK. Blackish; short and strong.

FEET. Brownish-green, with darker webs.

IRIDES. Light brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	8·5 in.
WING	...	...	...	4·6 „
BEAK	...	...	...	0·65 „
TARSO-METATARSUS	...	...	...	0·9 „
EGG	...	...	...	1·9 × 1·25 in.

¹ In spring and autumn these regions are mottled with black and white: I have several times picked up Common Guillemots showing this transitional stage of plumage.

Sub-Family FRATERCULINÆ.

PUFFIN. *Fratercula arctica* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 51; Dresser, 'Birds of Europe,' vol. viii, pl. 625; Lilford, 'Coloured Figures,' vol. vi, pl. 43; Booth, 'Rough Notes,' vol. iii, pl. 25.

Though rather more locally distributed around our coasts than either the Razorbill or the Common Guillemot, yet the Puffin is one of the most familiar of all rock-birds. This is readily understood; for even to the most casual observer it is a remarkable-looking Auk, at once attracting attention, especially in the breeding-season, when tame to a degree, it swarms in thousands on certain cliffs. During the winter¹ months, but few birds frequent our coasts, for at that season the vast majority are leading a wandering life on the open sea.

Like other Auks, this species has been recorded occasionally from inland localities, having been blown in from the sea by the storms of late autumn and winter. But even in summer it has been known to appear in strange places. Thus "Mr. Kane relates that early in June 1893 a man in his employment, near Monaghan, brought him a live Puffin in a state of starvation which had walked into his cottage with his ducks" (Ussher).

Flight.—The flight is swift and well sustained and the bird, with rapidly-beating pinions, usually pursues a straight path. On the approach of a steamer, it may be seen at times fluttering over the surface² for several hundred yards, as though unable to rise; generally, however, it endeavours to escape by diving.

During the breeding-season, Puffins may be seen almost all day long flitting rapidly twixt sea and cliff, some hurrying up with food for the young, others returning to the

¹ On January 2nd, 1891, after a storm, I picked up an adult bird on Bray beach, co. Wicklow; this specimen, which I mounted, proved to be a peculiarly fine one in full winter-dress, showing the smaller and less highly-coloured beak than that which accompanies the nuptial plumage.

² I have observed this habit not only in our seas, but also in the Gulf of St. Lawrence where the steamer I was aboard passed through great numbers.

water;¹ and in densely-packed colonies they seem to fill the air like a swarm of gigantic flies. On sea they are much less noticeable than on land, but even when flying the massive head and remarkably deep beak are distinguishable.

Food.—Food is procured by diving, at which the Puffin is expert. It uses both wings and legs to propel itself under water, and can turn adroitly in pursuit of 'fry' at no great depth from the surface. When catering for their young, the parent-birds capture several fish in rapid succession, and as many as half-a-dozen may be seen dangling from the sides of their beaks when they arrive on the slopes of the cliff. Small crabs are also eaten by the adult birds.

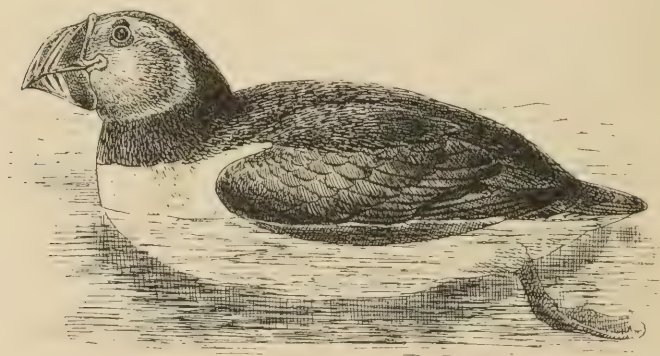


FIG. 59.—PUFFIN.

Nest.—About the middle of March the birds begin to assemble on the cliffs of both island and mainland. The numbers increase for a couple of weeks or more, until colonies, in some places composed of countless throngs, have assembled. Breeding as they do in burrows, generally those appropriated from rabbits, these birds require earthy soil, so that on barren, precipitous headlands teeming with Guillemots and Kittiwakes, they are often scarce. But should the summits of the cliffs be capped with patches of soft earth, then Puffins may be seen ascending to their lofty though subterranean homes.

¹ At the appearance of the Falcon thousands leave the cliffs and dart downwards to the sea with amazing speed.

Often an interesting insight into Puffin family-life is gained by the observer who, taking a quiet walk on a day in June round the sharp bend of a sloping cliff honeycombed with rabbit-burrows, suddenly finds himself in the midst of a Puffin-colony, where hundreds of these little creatures are standing erect and gazing with their knowing little eyes, half grave, half comical in expression, astonishing him with their confidence and impudent demeanour. Odd-looking Auks indeed they are, and with what a curious mixture of facial expression! Their fat, bulging, and good humoured-looking cheeks offer a bold contrast to the gravity of countenance displayed in their great, aquiline, nose-like beak, while the dignity of this member's form is, in turn, sadly marred by the way in which Nature has embossed, grooved, and tattooed it in glaring colours.

The usual attitude of this Auk when not alarmed is almost erect. The whole foot, including the heel, touches the ground, and though the bird is 'standing' in the true sense of the word, it is commonly described as 'sitting up.' But directly it catches sight of the spectator, curiosity is aroused, and it raises itself on tiptoe, the position generally depicted in 'photographs from nature.'¹ The bird walks in a decidedly awkward and shuffling manner; the heels are barely raised off the ground, yet at each step the feet are sprawled far apart while the body waddles from side to side.

On some headlands, the single egg is deposited on the ledge or crevice of a cliff. Rabbits are said to be dislodged from their rightful homes and may get bitten (and this the Puffin can do viciously with his formidable beak), should they resist eviction.

Where rabbit-burrows are scarce, or the soil is hard and stony, the bird scrapes for itself a comparatively shallow hole: the nest is composed of dry grass and a few feathers.

The egg, the shell of which is rough in texture, is at first greyish-white, finely spotted, sometimes even zoned with pale lilac and pale reddish-brown.

Incubation begins about the first week in May, and lasts a month, and during that time the shell becomes much

¹ This attitude is easily secured by the aid of a camera, but it is not really natural, expressing, as it does, a position of unusual attention rather than one of comfort and satisfaction. To photograph a Puffin in a perfectly natural attitude (as it may be seen from ambush) would be a much more difficult task.

discoloured. The young keep to their burrows until they are well fledged, when they flutter down and accompany their parents out to sea. They run the chance of being seized by Falcons, and by the larger Gulls, especially if the burrows are not quite close to the edge of the cliff.

Before August is over, the cliffs are quite deserted and the birds may be seen scattered on the neighbouring seas. A distinct southerly move takes place in autumn¹ and after November, few birds, save stragglers, are seen off our coasts.

The following localities accommodate large colonies :— In England; the Scilly Isles, Lundy Island, Flamborough Cliffs, and the Farne Islands.

In Scotland; the large Western and Northern Groups, including St. Kilda.

In Ireland; many of the islands off the wild western and southern shores, also Rathlin Island and Horn Head in the north, and the Saltees, and Lambay² on the east coast.

Geographical distribution.—Though reaching higher latitudes than our Islands, yet the Puffin is a bird which resorts to Temperate and Sub-arctic regions in the breeding-season. Thus in Europe its range extends from the coast of France up the Channel Isles, northward to the Faroes, Iceland, and the Norway coast. Eastward it reaches Novaya Zemlya. In America it breeds in Greenland up to 70° N. lat. and along the east coast of Canada as far south as the Bay of Fundy, migrating in winter down to Massachusetts (Saunders). On its southern migration it is not uncommon in many European Seas including the Mediterranean, as far east as Sicily, but it chiefly resorts to the North Atlantic Ocean, down to lat. 40° N.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, greyish-black; forehead, dark grey; cheeks, chin, throat, and sides

¹ Mr. Harvie-Brown cites that at 'Eilean Ghlais, countless numbers were observed travelling south during the first three days of August, 1894 (Ann. Scot. Nat. Hist., 1894, p. 224).

² On June 17th, and again on July 22nd, 1900, I visited this Island and found a small colony breeding in rabbit-burrows on the slope of the cliffs.

of head, light greyish-white, the cheeks of a lighter shade; neck completely surrounded by a broad black collar; back, scapulars, wings, and upper tail-coverts, glossy-black; tail (of 16 feathers), black; primaries, brownish-black; breast, abdomen, and under tail-coverts, white.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage except that the cheeks are dark grey, especially in front of the eye, where they are almost mouse-brown colour. The gloss of the dark feathers is faintly developed.

Immature, male and female.—Cheeks, deep grey; feathers in front of the eye, black, as in the adult winter-plumage.

Nestling.—Jet-black.

BEAK. Very deep from above downwards, but flattened from side to side. Coloured in distinct areas; basal portion, blue; terminal portion, carmine; narrow intermediate portion, light yellow; tip, dark horn-colour. Each side of the beak is grooved and ridged as already described. In winter it is shallower as the outer sheath is shed (Bureau, Bull. Soc. Zool., France, ii, pp. 377-399, also translation by Harting, 'Zoologist,' 1878, p. 233).

FEET. Orange-colour.

IRIDES. Greyish-white.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	13	in.
WING	..	...	...	6	„
BEAK	...	..	...	1.75	„
TARSO-METATARSUS	...	...	...	1	„
EGG	...	...	...	2.25 × 1.6	in.

Allied Species and Representative Forms.—*F. glacialis*, a large race from Spitzbergen, probably occurs sparingly in Novaya Zemlya and more plentifully on the coast of Greenland up to lat. 70° N.

Order PYGOPODES.

Family COLYMBIDÆ.

GREAT NORTHERN DIVER. *Colymbus glacialis* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 43; Dresser, 'Birds of Europe,' vol. viii, pl. 626; Lilford, 'Coloured Figures,' vol. vi, pl. 44.

This remarkably handsome bird, with richly-variegated nuptial plumage, is the largest Diver which frequents the British Seas. It is not uncommon off our coasts during the colder months of the year, especially on migration in autumn and spring. It has frequently been observed on fresh-water lakes and in other inland situations. Only a few stragglers, apparently immature birds, are seen between June and September, as the great majority have pushed northward to breed.

Along some portions of the British coasts the Great Northern Diver is quite numerous as a passing migrant, for instance in the waters of the deeply-indented coasts of the north-west of Scotland and Ireland. Here I have seen fine adults quite late in spring, though most of the birds which frequent sheltered waters appear to be immature. The old males are very wary, keeping to the open sea and only permitting one to inspect them satisfactorily through a field-glass.

Unlike the Auks, this and the three succeeding species of Divers, are not gregarious, though several may be seen tenanting the same fishing-grounds at no great distance apart. When swimming, the Great Northern Diver usually has much of its body immersed; if apprehensive of danger it further submerges itself, at the same time carrying its head and neck stretched out almost horizontally and just above the surface of the water. It eludes its enemies

by diving, disappearing under the water like a flash, yet so quietly that the surface where it went down is only faintly marked with ripples. Its sub-marine course is very uncertain; I have scores of times seen it reappear fully a hundred yards in the opposite direction to that in which it descended. Thus a bird heading due north will dive in front of the bow of a boat and perhaps come up astern swimming in a 'bee-line' south.¹ The length of time during which it can remain under water is remarkable. A limit of ten minutes has been given by some writers; personally I have been unable to verify this statement.



FIG. 60.—GREAT NORTHERN DIVER.

The Great Northern Diver has often been captured in fishing-nets; at other times it has been made prisoner in its endeavours to escape from being stranded in the shallows of bays and channels.² It sometimes uses its wings as propelling organs under water, thereby differing from the

¹ This observation has taught me that one has, on the whole, a better chance of securing a specimen if he bring his boat to a stand-still directly the bird dives. A sharp look out must be kept for its reappearance, and the shot must then be fired immediately, for if the bird rises near the sportsman and sights him, it will instantly disappear.

² In water, insufficiently deep to swim or dive, I have seen this bird stand quite erect as though puzzled at the behaviour of the fast receding tide.

Auks which invariably do so, and the Cormorants which shoot through the water with closed wings. Unlike the latter the Great Northern Diver when swimming on the surface, does not carry its neck erect with head and beak pointed upwards, on the contrary, as already mentioned, the neck is held out almost horizontally, while the beak nearly touches the surface of the sea. In this way the two species can be identified even at a moderate distance.

On land it progresses with an awkward and shuffling gait. Sir R. Payne-Gallwey, who kept one alive (uninjured) on a yacht for a week, describes its movements. "The bird could move about as it liked, yet never attempted to fly, but slid along on its breast, with its wings beating the deck and its legs working as if in the act of swimming. It became fairly tame, and bolted salted herrings whole, but its mournful cries at night disturbed the sleep of all on board, and I gladly returned the bird to its natural element" ('Letters to Young Shooters,' Third Series, pp. 195-6).

Flight.—Though moderately swift and powerful when once started on the wing, this bird confines itself mainly to the water and depends largely on its diving-capacities to elude observation. It generally manages to get out of shallow water by floundering over the surface in an excited manner, but when once stranded on dry land it appears unable to rise.

Voice.—The voice varies from a melancholy howl to a shrill startling blast or trumpet-like note. It sounds like *gulli-gulli-ā-ōō-ōō*, which shortens to *ērā-ōō-ōō*, or *īlī-ōā-ōw*. A low croak is also heard at times.

Food.—The main diet consists of fish, including small plaice, flounders, dabs, and other flat-fish.¹ For these the bird dives to a great depth, and has been captured in nets many fathoms below the surface. Crabs and shell-fish are also eaten, as well as small fry picked from the surface.

Nest.—The nest is formed on the ground, on a small island or near the edge of a lake, amid coarse herbage such as sedges and rushes; in some localities it is more openly situated, being a mere hollow in the dry ground. It is always quite close to water, and a beaten track is usually present, made by the bird on its passage to and fro.

¹ In smooth shallow channels and creeks I have noticed this species searching apparently for flat-fish on the sandy sea-floor.

The eggs are laid about the middle of June and are two in number; in colour they are olivaceous shading to russet-brown with a few dark brown spots.

Geographical distribution.—As a breeding-species the Great Northern Diver resorts chiefly to the New World and is widely distributed over the colder regions of North America. It nests from Greenland westward across Northern Canada to Alaska. In the north-west of Canada it meets with its ally the White-billed Diver, while the latter extends its range eastward to Arctic Asia. Iceland seems to be the eastern limit and the only European country where our bird nests; yet it is interesting to note that adults have been observed about North Scotland throughout the summer, and there are grounds for supposing that this species may breed in the Northern Scottish Isles.

Two specimens were obtained in Europe under remarkably interesting circumstances, as recorded by Prof. Newton (*Dict. Birds*, p. 153). Each bird was previously wounded by a weapon of supposed Trans-Atlantic origin. One had "an arrow headed with copper, sticking through its neck," and was shot on the Irish coast (Thompson, *Nat. Hist. Irel.*, iii, p. 201). The other was found dead in Kalbaksfjord in the Faroes, with an iron-tipped bone dart, fast under its wing (Herr H. C. Müller, *Medd. Nat. Forening*, 1862, p. 35).

In winter the Great Northern Diver wanders along the Atlantic sea-board as far south as Central America, spreading eastward to North-western Europe, the Mediterranean and Black Seas. Further eastward, it is represented by *C. adamsi*. Numbers find their way to large sheets of fresh water in the interior of the North American and European Continents.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.* — Head, satin-black; upper neck and throat, satin-black glossed with purple; lower neck, black, glossed with green; the dark ground-colour of the neck is interrupted by two semi-circular bands, each composed of a series of short vertical white stripes; twelve of these may be counted in the upper band, eighteen in the lower; back, scapulars, and upper surface of the wings, black, conspicuously marked with white spots arranged in belts; primaries and tail, brownish-black faintly

glossed with green : sides of the upper breast, streaked with black and white and glossed with green ; breast and abdomen, white ; under tail-coverts, chiefly brownish.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—The neck-bands disappear and the ground-colour of the head and neck becomes brownish-black ; the spots on the back, scapulars, and wings, are ash-grey on a dark brown ground-colour not so pure as in the nuptial plumage ; throat, fore-neck, breast, and abdomen, white.

Immature, male and female.—Resembles the adult winter-plumage except that the back, scapulars, wings, and hind-neck, are dark greyish-black ; breast and abdomen, impure white.

BEAK. Blackish-brown, tip lighter ; powerful and dagger-like.

FEET. Greenish-black.

IRIDES. Crimson.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	31 in.	Female smaller.
WING	...	...	14 "	
BEAK	...	...	3.5 "	
TARSO-METATARSUS	...	...	3.6 "	
EGG	...	...	3.5 × 2.5 in.	

WHITE-BILLED NORTHERN DIVER. *Colymbus adamsi* (G. R. Gray).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. ix, pl. 722 ; Lilford, 'Coloured Figures,' vol. vi, pl. 45 ; 'Ibis,' 1894, pl. 8.

This species, the Arctic form of the Great Northern Diver, is a very rare visitor to British waters. An example was shot at Pakefield, near Lowestoft, in the spring of 1852 ; it is now in the collection of Mr. J. H. Gurney. An immature specimen, supposed to have been taken in Suffolk at a later date, is figured by Babington ('Birds of Suffolk'). Another was obtained on the coast of Northumberland, and

is now in the Museum at Newcastle. A fourth was obtained, December 1872, on Hickling Broad, Norfolk, by the late Mr. E. F. Booth (Norf. and Nor. Nat. Hist. Soc.). A fifth was procured in the winter of 1895-6 in Hampshire, as stated by the Rev. J. E. Kelsall. A sixth (an immature bird), shot on Loch Fyne, autumn, 1893, was identified by Dr. R. Bowdler Sharpe, in the collection of Mr. Bulkley Allen, of Altrincham.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—This Diver in nuptial plumage may be distinguished from *C. glacialis* as follows:—“The head and upper neck are glossed with green, while the lower neck is tinged with purple (the reverse of the arrangement in the Great Northern Diver); the white streaks of the transverse band on the throat are not more than eight in number, with fewer than ten on the lower neck; the white spots on the scapulars are decidedly longer than broad; while those on the flanks and upper tail-coverts¹ are smaller than in the Sub-arctic species; and finally, this high northern form is superior in size. Some of these distinctive features had attracted the attention of the late Sir James Clark Ross, who virtually discovered this bird on Boothia in 1830, though it was only named in 1859 by G. R. Gray; but until Seeborn worked out and summarised the points of difference (Zool., 1885, p. 144), its claims to recognition were somewhat coldly received” (Saunders, Man. Brit. Birds, 2nd Edit., p. 711).

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the winter-plumage of *C. glacialis*.

Immature, male and female.—Resembles the adult winter-plumage.

BEAK. *Yellowish-white at all seasons*; under segment sharply upcurved from the angle, upper border of upper segment straight from the forehead to the tip, deeper and stouter than that of *C. glacialis*.

FEET. Brownish-black.

IRIDES. Reddish.

EGGS. Resemble those of *C. glacialis*.

¹ In this species the tail consists of eighteen feathers, whereas in *C. glacialis* there are twenty (W. R. Ogilvie-Grant, Cat. Birds Brit. Mus., vol. xxvi, p. 501).

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	33 in.
WING	...	...	...	14·9 „
BEAK	...	...	...	3·7 „
TARSO-METATARSUS	...	...	...	3·4 „
EGG	...	...	...	3·65 × 2·3 in.

BLACK-THROATED DIVER. *Colymbus arcticus* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 44; Dresser, 'Birds of Europe,' vol. viii, pl. 627; Lilford, 'Coloured Figures,' vol. vi, pl. 46.

Though this Diver may be regarded as an annual winter-visitor, it is much rarer than either the Great Northern or the succeeding species. Old males with their handsome velvety-black throats and richly variegated upper-plumage are not often seen.¹ It is not improbable that immature individuals of this and the next species are often confounded, as they resemble each other in plumage; the Black-throated Diver is, however, the larger bird. Exceptionally, it wanders southward along the English coast visiting the Channel. In the 'Zoologist' for 1903, p. 277, Mr. Gordon Dalglish states that on May 10th, 1903, an emaciated immature male was picked up dead on the beach near Cobo, in Guernsey, this being the second specimen recorded from that locality.

Along parts of the Scottish coast it occurs all the year round, nesting in several counties of the mainland as well as in the Orkneys and Hebrides. It has increased in North Uist of late years, since the practice of robbing the eggs has been checked (Harvie-Brown, 'Avifauna Of The Outer Hebrides,' 1888-1902; Ann. Scot. Nat. Hist., 1903, p. 21).

The Black-throated Diver has been recorded from the greater part of the Irish coast; while it has been taken

¹ In the 'Zoologist' for 1877, p. 329, Mr. Warren records seeing this bird in full nuptial dress at the mouth of the River Moy, Mayo coast; the late Dr. Cox observed it on the Dublin coast in nuptial plumage in May. It has also been noted in nuptial plumage about Belfast Bay by the late Sir R. L. Patterson

inland in the following counties:—Queen's Co., Meath, Roscommon, and once or twice on Lough Neagh (Ussher).

Flight.—This species can move rapidly at a considerable height in the air, and at times, when in pursuit of fish, will shoot downwards with almost the speed of a Gannet: but its diving-powers are no less remarkable than those of its congeners, and it generally escapes danger by travelling under rather than over water.

Voice.—The cry, harsh and unmusical, may be heard a long way off, and is uttered during flight and when the bird is resting on the water.

Food.—Fish, many of which are captured at a considerable depth below the surface, form the main diet, but crabs and shell-fish are also eaten.

Nest.—The nest is usually situated near the water's edge, generally on a small island of a fresh-water lake. A shallow depression in the ground amid grass and coarse herbage accommodates the two eggs. Floating nests supported by aquatic plants have been observed.

The eggs are olive-green shading to brown in colour, and thinly spotted with black or very dark brown.

Incubation is slow, lasting twenty-eight days.

The Black-throated Diver breeds in many counties of Scotland, especially in the north-western section. The nest has been recorded from Caithness, Sutherland, Inverness-shire, Perthshire, Ross, Argyll, several of the Outer Hebrides, the Orkneys, and more recently from the Shetlands.

Geographical distribution.—Abroad, it breeds abundantly in Northern Europe (from Scandinavia eastward), Northern Asia over Siberia to the Pacific, and in the Eastern section of Arctic America. In winter it migrates southward over Europe, visiting the coasts and inland waters of that Continent, also the Mediterranean, Black, and Caspian Seas, and extending eastward to Japan.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head and back of neck, ash-grey; back and scapulars, blackish, marked with wide white quadrate spots; wing-coverts, spotted with white; chin and throat, sooty-black; front of neck, purplish-black, interrupted by a half collar of short white streaks; primaries and tail, black; sides of neck, barred with black

and white; breast and abdomen, white; long under tail-coverts, sides, and flanks, mostly black.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Chin, throat, fore-neck, breast, and abdomen, white; back, scapulars, and wings, chiefly deep ashy-brown; top of head and back of neck, light brown, becoming darker on the sides of the neck; sides and flanks, brownish-black.

Immature, male and female.—Resembles the adult winter-plumage except that the feathers of the back, the scapulars, wing-coverts, rump, and upper tail-coverts, are brownish, broadly margined with grey.

BEAK. Bluish-black.

FEET. Brownish-green.

IRIDES. Red.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	27·5 in.	Female smaller.
WING	...	...	11·75 „	
BEAK	...	...	2·4 „	
TARSO-METATARSUS	...	...	3·4 „	
EGG	...	...	3·25 × 2·15 in.	

Allied Species and Representative Forms.—*C. pacificus*, paler on the nape and on the back of the neck, inhabits the north-western parts of North America, migrating south to California in winter, and it has been recorded from Japan (W. R. Ogilvie-Grant, Cat. Birds Brit. Mus., vol. xxvi, pp. 495-96).

RED-THROATED DIVER. *Colymbus septentrionalis* (Linnaeus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 45; Dresser, 'Birds of Europe,' vol. viii, pl. 628; Lilford, 'Coloured Figures,' vol. vi, pl. 47.

The Red-throated Diver is common and widely-distributed in autumn and winter on British waters. It appears, as a rule, in the latter end of October, though I have seen

not a few as early as September. Throughout the winter this Diver may be seen fishing in the open sea, as well as in sheltered bays and on tidal rivers, while a small number resort to fresh-water lakes.

During April and early May I have noted several in nuptial dress, with richly-coloured red throats, in the Irish Channel and along the rugged coast-line of the west of Ireland. Mature birds in transition-plumage from nuptial to winter, still retaining to a certain extent their red throats, have been obtained in autumn, while Mr. Warren records one instance of a starved specimen, in full nuptial plumage, not long dead, which he picked up on the Sligo coast on July 24th, 1890. But the majority which frequent our coasts are immature birds, together with adults which have already assumed their more sombre winter-dress.

In May the Red-throated Diver migrates northward to breed, and except in the north-western section of Scotland, including the Hebrides, Orkneys, and Shetlands, and in a few localities in the north-west of Ireland where it nests, it is of rare occurrence during June, July, and August.

In fine, sunny weather, small parties may be seen resting buoyantly on the surface of the calm sea, or rolling and tumbling from side to side in ecstasies of delight, a habit which when first witnessed gives one the idea that the birds are fluttering from the effects of a recent gun-shot wound.

This species can travel great distances under water, and when closely pursued, will appear on the surface only for an instant to take breath, before disappearing again. Like others of its Genus, it goes down practically without leaving a ripple to mark the place of immersion.

Flight.—The flight is swift and moderately buoyant, and this bird like its congeners, possesses the power of precipitating itself from a great height in the air into the waves in pursuit of fish. I have seen it crossing over land in the vicinity of adjacent lakes, as though it were changing its quarters from one to the other; and have further noticed how, on many occasions, it will take wing rather than dive at the approach of a boat, while its habits of coursing up and down tidal channels have been frequently observed. But it must not be supposed that it usually tries to escape its enemies by flight, on the contrary, its diving-powers afford it by far the best and most ready means of eluding observation.

Voice.—The harsh, discordant bark is generally heard when the bird is on the wing. It resembles the syllables *kārk-kārk*, shortening sometimes into *kāk-kāk-kāk*.

Food.—Fish are consumed in large quantities, the bird often gorging itself with sprats, flat-fish, eels, &c. Fresh-water fish are taken, but those of the sea are preferred, and even when nesting on inland lakes at some distance from the coast, the young are fed upon sea-fish conveyed by their parents at frequent intervals during the day.

Nest.—The nesting-sites are rather similar to those of the Black-throated Diver, but are frequently situated in wilder localities. A favourite resort is the margin of a mountain-tarn, sometimes elevated many hundred feet above the sea-level. Thus in Ireland a nesting-site described by Mr. Ussher was beside a small mountain-lake, the most elevated of a series, and more than three miles from the nearest bay. The nest was scraped in the peaty surface of a bank, on the verge of the open water, on swampy ground amid flowering bog-bean. The birds flew to the sea to fish, returning at night. When the female was hatching the male was generally on the lake. The nest is always very close to the margin of the lake. "The sitting bird lies flat down on the eggs, and, when disturbed, glides into the water, and at first swims very low; then, bending the head and neck forwards, it disappears with a gentle plunge which hardly leaves a ripple; but I have noticed that if my stay near the nest was prolonged, the bird would swim high, snapping the mandibles and turning the head with a jerking action, while occasionally stopping to drink" (Saunders, *Man. Brit. Birds*, 2nd Edit., p. 716).

The eggs, two in number, are greenish-brown, spotted with umber. They are laid at the end of May or during the first week in June.

In Great Britain this species nests from Argyll northward to the Shetlands and Orkneys, and westward to the Hebridean Islands. The breeding-haunt in co. Donegal appears to be the only one in Ireland.

Geographical distribution.—Abroad, it breeds in Arctic and Sub-arctic Europe, Asia, and America, having a circumpolar distribution. In autumn and winter it migrates southward over Europe (visiting the Mediterranean, Black, and Caspian Seas), Asia to China and Japan, and along both sides of the American sea-board to about lat. 25° N.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, greyish-black; back of neck, slate-grey, streaked with white; sides of neck and head, lighter grey; fore-neck, marked with an elongated rich reddish-brown patch, the chin and throat above it being grey; back, scapulars, wings, rump, and upper tail-coverts, ash-brown, faintly glossed with green; breast and abdomen, white; primaries, tail, flanks, and under tail-coverts, chiefly brownish.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—The red of the throat is absent; back, scapulars, wings, rump, and upper tail-coverts, ash-brown, spotted and streaked with white; sides of the face, chin, throat, fore-neck, breast, and abdomen, white.

Immature, male and female.—Resembles the adult winter-plumage, but the feathers of the upper parts are edged white, and the fore-neck is white freckled with brown.

BEAK. Black.

FEET. Greenish-black.

IRIDES. Dark brown or hazel.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	24 in.
WING	...	...	...	11·2 „
BEAK	...	...	...	2·4 „
TARSO-METATARSUS	...	...	...	3 „
EGG	...	...	...	2·75 × 1·8 in.

Note.—Mr. Harting, in his ‘Handbook of British Birds,’ 2nd Edit., 1901, p. 266, mentions a white variety of this Diver. It was obtained in Essex (*vide* also ‘Zoologist,’ 1862, p. 8002).

Family PODICIPEDIDÆ.

GREAT CRESTED GREBE. *Podiceps cristatus* (Linnaeus).

Coloured Figures.—Gould, ‘Birds of Great Britain,’ vol. v, pl. 38; Dresser, ‘Birds of Europe,’ vol. viii, pl. 629; Lilford, ‘Coloured Figures,’ vol. vi, pl. 48; Booth, ‘Rough Notes,’ vol. iii, pl. 20.

This fine bird, distinguished from other Grebes by its superior size, and remarkable for its head-appendages assumed during the nuptial season, is not uncommon in the British Isles. It is resident to a considerable extent, and is somewhat widely distributed over large sheets of fresh water, to which it is on the whole more partial than to the tide. Its favourite haunts are quiet sequestered lagoons, lakes, and ponds, where the waters are deep and still, and where reeds, sedges, and other aquatic vegetation afford shelter and concealment. Though the large lakes are most frequented, yet this Grebe may occasionally be observed lurking amid the sedges of quite a small pond. Artificial waters, such as the reservoirs of the midlands of England, are also visited. On the Broads of Norfolk this species is quite common as a breeding-bird.

Like other Grebes it is wont to change its quarters in winter, migrating from lakes to rivers or to tidal waters. Small parties may consort together in bays and estuaries though the species is not strictly gregarious. In hard weather when lakes and rivers become frost-bound, numbers appear along the sea-coast.

The attitude of the Great Crested Grebe when swimming is very graceful. Its neck, long and slender, is carried erect, its head straight or with a slight downward droop. Thus on the water the carriage offers a contrast to that of the Cormorant which, though carrying its neck erect, points its head upwards at such an angle, that the throat appears unduly stretched as though the bird were endeavouring to swallow forcibly an object too large for its

gullet. As a rule this Grebe swims low in the water—a common characteristic of diving-birds—but when resting, heedless of danger, it will rise buoyantly. It generally dives to escape danger, disappearing almost without a splash, and remaining under water for a considerable time.

Flight.—Grebes, as a race, fly but little, except when on migration, when locally changing their quarters, or when driven to take wing by their enemies. Nevertheless though their wings are small and their flight-feathers short, they are capable of sustained journeys in the air. When flying, the neck is extended at full length in a line with the body,

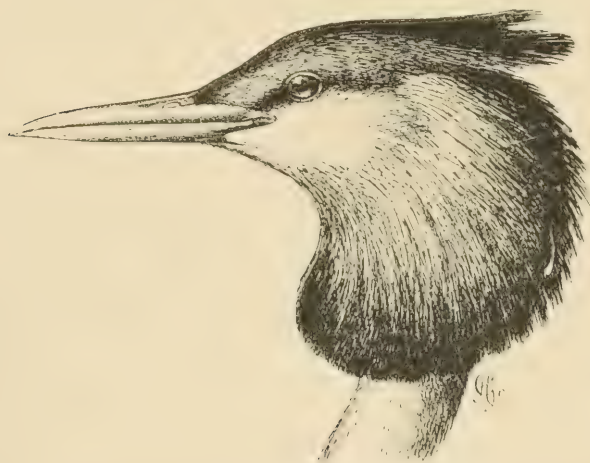


FIG. 61.—HEAD OF GREAT CRESTED GREBE. $\frac{2}{3}$ Nat. size.

while the large lobed toes (fig. 62), uncovered by the rudimentary tail, are stretched out behind. This Grebe at times may be seen flying at a considerable height, either alone or in company with other wildfowl.

Voice.—The note is hoarse, and though rather subdued, is full-toned and carries a long distance. When alarmed the bird utters an angry *cūk-cūk-cūk-cūk-cūk-cūk*.

Food.—At sea the chief food consists of fish, often eels, but on fresh water, tadpoles, frogs, newts, aquatic insects, and their larvæ are consumed, and the bird not only dives for its prey, but also swims about with rapid twists and

turns, snatching at insects on the surface of the water. All Grebes are very voracious, and will attempt to swallow fish so large as to become impacted in the gullet; the young in particular, which can catch fish at a very tender age, are sometimes choked in their endeavours to engulf too large a prey. It is usual to find feathers in the stomach mixed with half-digested food.

Nest.—The Great Crested Grebe selects for its breeding-haunts a quiet, sheltered, and unfrequented spot in a thick reed-bed on an inland lake. The site is sometimes near

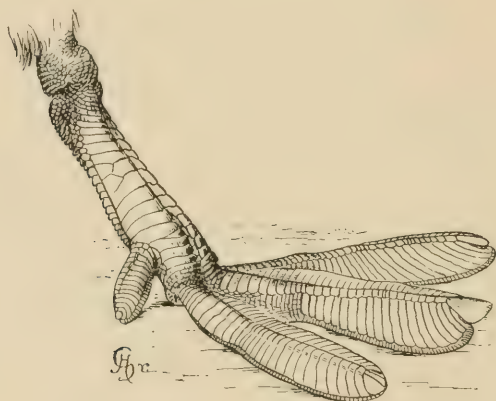


FIG. 62.—LEFT FOOT OF GREAT CRESTED GREBE. $\frac{1}{2}$ Nat. size.

the margin and in other cases at some distance from it, and always surrounded by water deep enough for the bird to dive into at the slightest alarm.

The nest, composed of a compact mass of aquatic plants, broken sticks and leaves, moistened and usually in a state of decay, either floats on the surface of the water moored to the surrounding reeds, or in shallow places is built up from the bottom of the lake. It is most difficult to find, firstly because it is well concealed among the dense growth of reeds or sedges, and secondly because the owners seldom betray their presence to the intruder. It is marvellous how quickly and stealthily the hatching-bird can glide off, cover her eggs with dead leaves, and then disappear under water, all being the work of a second or two. Indeed, the egg-

collector, viewing a great area of a sedge-grown lake perhaps several acres in extent, becomes bewildered in his endeavours to discover where the prize really lies. The eggs, laid in May, June, or even early in July, are from four to five in number, white in colour, elongated in shape, pointed at either end, and of a chalky texture. As incubation proceeds and they lie in contact with the rotting materials which line the nest they become discoloured, deepening from yellow to brown. The lining-membrane of the shell is bright green. Great care is taken of the young and the latter sleep on their parents' backs for some days after they are hatched. A male has been observed to carry a chick on his back for ten days while the female dived and brought food (Ussher). An instance is recorded of a Grebe, which when shot flying, dropped two of its offspring on the water (Sir R. Payne-Gallywey). Professor Newton describes how the young if taken from the nest and placed on dry ground, move along almost like quadrupeds, using their wings like fore-feet ('Ibis,' 1889, p. 577).

In the nesting-season the Great Crested Grebe loses much of its shyness, and its habits may be watched with little difficulty. "A pair will approach each other with their necks held up and crests erected, all the while uttering their croak. Having met, they remain in that attitude, with the points of their bills touching each other. After some moments they lower their heads simultaneously until their bills touch their breasts, and then they renew the manœuvre, setting to one another like partners in a quadrille; or one dives and the other follows it. At other times they swim or rest on the water side by side (Mr. Kane in *Field*, March 4th, 1893)." (Ussher, 'Birds of Ireland,' p. 377.)

This species breeds extensively in suitable localities in Great Britain and Ireland. In the latter country, which is much interspersed with sheltered lakes, the bird is widely distributed. Indeed its absence from the more remote districts of the West of Ireland is due largely to the bleak nature of the surrounding country, the paucity of aquatic vegetation which affords shelter, and the prevalence of westerly gales which cause waves of no small magnitude to rise on these waters.

Geographical distribution.—Abroad, this Grebe is widely distributed as a breeding-species. It is found in many countries of Temperate Europe, reaching northward as far

as Sweden, and southward to the Mediterranean. It is abundant in parts of Russia, Germany, and Hungary. Its breeding-range extends to both sides of the Equator, from North to South Africa, also to many countries of Asia, including North India, Palestine, and China. Further south it may be traced to Australia, Tasmania, and New Zealand. It also visits Japan.

DESCRIPTIVE CHARACTERS.

PLUMAGE.¹ *Adult male nuptial.*—In spring this Grebe becomes adorned with a crest of dark brown feathers which arises from the top of the head and is prolonged on either side in the form of horns; forehead and crown, blackish; cheeks, throat, and chin, white tinged with rufous; over the eye is a stripe of the same colour; encircling the throat is a 'tippet' or 'frill,' capable of erection, and composed of chestnut-brown feathers margined with black; back, scapulars, wings, rump, and upper tail-coverts, dark brown; lower part of the hind-neck, dark greyish-brown; lesser wing-coverts, white forming a band along the edge of the wing; carpals and secondaries, white, conspicuous when the bird is flying; primaries, dark brown; fore-neck, breast, and abdomen, silvery-white; flanks, reddish-brown.

Adult female nuptial.—Similar in plumage to the male, but the head-ornaments are less developed.

Adult winter, male and female.—Resembles the nuptial plumage except that the head-garniture is absent in both sexes.

Immature, male and female.—Resembles the adult winter-plumage except that the head and neck are marked with longitudinal stripes of ash-brown; crest and chestnut tippet not marked until about the second year.

Nestling.—The nestlings are very beautiful creatures, richly striped with dark brown and black on a yellowish-white ground-colour. Their beaks are tinted brilliant orange.

BEAK. Reddish, tip pale horn-colour.

FEET. Light olive-brown; becoming blackish on the outside; adjacent toes webbed but not connected with one another.

IRIDES. Crimson; narrow golden circle round pupil.

¹In all Grebes the plumage is composed of short, closely-set feathers, very silky in texture; the skins at one time were in large demand for the manufacture of muffs, collarettes, and other articles of apparel.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	21	in.	Female smaller.
WING ...	...	7.5	"	
BEAK ...	...	1.75	"	
TARSO-METATARSUS	...	2.5	"	
EGG ...	...	2.2	× 1.5 in.	

RED-NECKED GREBE. *Podiceps griseigena* (Boddaert).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 39; Dresser, 'Birds of Europe,' vol. viii, pl. 630; Lilford, 'Coloured Figures,' vol. vi, pl. 49; Booth, 'Rough Notes,' vol. iii, pls. 21, 22.

The Red-necked Grebe occurs as a winter-visitor along our coasts, and instances from inland localities are quite exceptional. The eastern sea-board of Great Britain is chiefly frequented, on the south coast of England the bird is of irregular occurrence, while in the west and north it is seldom met with, though the Orkneys and Shetlands¹ have yielded several specimens. It would appear that it has not been recorded from the Hebrides. Instances of its occurrence in nuptial plumage are very rare.² Occasionally this Grebe appears in considerable numbers; thus in Norfolk in 1865, and 1897, in Yorkshire in 1891,³ and on the coast of East Lothian, in the early part of 1895, considerable influxes took place (Saunders).

A young specimen with dark facial stripes was shot on Blakeney Bar in Norfolk, as recorded by Mr. J. H. Gurney in the 'Zoologist,' 1901, p. 134. Two others, not fully grown, were obtained in the same county on previous occasions, yet there are no grounds for believing that any of

¹ Mr. Saxby records a specimen recently taken at Balta Sound, viz. on December 30th, 1901 ('Zoologist,' 1902, p. 113).

² An adult male was picked up on Farthing Down in Surrey, in 1890 in full breeding-plumage (J. A. Bucknill, 'Zoologist,' 1901, p. 254); while specimens have been obtained off the Sussex coast, showing the beginning of red feathers (Harting).

³ Twenty-eight specimens were taken off Scarborough in January 1891 ('Zoologist,' 1891, p. 193).

them were English-bred birds (*vide* also Booth, 'Rough Notes,' pt. xiii.).

The Red-necked Grebe very rarely visits Ireland. The earliest recorded specimen, an immature bird, appears to have been taken in the autumn of 1831, off the coast of co. Down (Thompson). The most recent capture appears to be that of a bird taken on the Donegal coast some years previous to November, 1887. Other examples have been obtained in the following counties:—

Cork:—One, December, 1842 (Thompson); another, December, 1850, from the same county.

Waterford:—An immature male, January 25th, 1854 (Ussher, 'Birds of Ireland').

Wexford or Wicklow:—An immature female, February 24th, 1838 (Thompson).

Dublin:—An immature bird, January 24th, 1848 (Thompson).

Antrim:—A female, February 23rd, 1850 (Thompson).

To these may be added an adult male, shot on the River Shannon (county not specified), February, 1865 ('Field,' March 11th, 1865; also Ussher, 'Birds of Ireland' p. 379).

Excepting the last record and that of the bird taken in the co. Waterford, the occurrences have been always on the coast.

In its general habits this Grebe closely resembles the preceding species. As a rule it is observed swimming not far from the land, particularly in rough weather, when it appears in greatest numbers. Being rather sombre-plumed, especially when in winter-dress, and swimming low in the water, it is easily overlooked.

Flight.—It flies rapidly, but generally endeavours to escape observation by diving.

Voice.—The note is harsh and somewhat similar to that of the Great Crested Grebe, but is said to be even louder.

Food.—Fish, eaten in large quantities, constitute the diet, but small molluscs and crustaceans are occasionally swallowed.

Nest.—In its selection of site and materials, and in the construction of the nest, this species resembles the Great Crested Grebe; indeed with the latter it may be found breeding in company. The eggs, characteristic of the Family to which the bird belongs, are muddy white, elongated, with both ends pointed, and three or four in number. They are laid during May or June.

Geographical distribution.—The Red-necked Grebe breeds over a considerable area of Temperate Europe, extending across the Continent from Denmark to Russia. Southward it may be traced as a nesting-species to the Black Sea, and northward to Norway. In Asia, it breeds as far as Eastern Turkestan and Siberia. On migration in autumn and winter it reaches the Mediterranean, crossing to North Africa.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head and back of neck, glossy blackish-brown; these feathers are elongated, forming a very slight crest, but no ‘tippet’ is discernible; cheeks, chin, and throat, greyish; feathers below the eye have white edgings which form a conspicuous streak, which also borders the grey of the cheeks and throat behind; back, scapulars, wings, rump, and upper tail-coverts, dark brown, with grey gloss; front and sides of neck, rich reddish-brown; breast, abdomen, and under tail-coverts, silky-white; upper breast, sides, and flanks, mottled brownish; primaries, and outer secondaries, ash-brown; inner secondaries, white; lesser wing-coverts, white, forming an alar bar along the edge of the wing.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Resembles the nuptial plumage, except that the chin, throat, and upper fore-neck are silvery white, and the cheeks, and the base of the fore-neck, are brownish-white.

Immature, male and female.—Resembles the adult winter-plumage but the general shading is less distinct.

BEAK. Dark brownish-black, with a yellow base.

FEET. Dull greenish-brown.

IRIDES. Yellowish-white, *not red as in other Grebes.*

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	18 in.
WING	...	...	...	7 „
BEAK	...	...	...	1.5 „
TARSO-METATARSUS	...	...	...	2 „
EGG	...	...	...	2 × 1.3 in.

Note.—This species is most readily distinguished from the Great Crested Grebe at all times of the year by the absence of a white stripe over the eye.

Allied Species and Representative Forms.—*P. holboelli*, a larger form is the representative in the North Pacific and North America generally, including Greenland; it also inhabits Eastern Siberia.

HORNED GREBE. *Podiceps auritus* (Linnæus).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 40; Dresser, 'Birds of Europe,' vol. viii, pl. 631, Lilford; 'Coloured Figures,' vol. vi, pl. 50.

The Horned Grebe, also known as the Slavonian Grebe, is a winter-visitor to our coasts, arriving in some districts in autumn and remaining until spring. It is not uncommon on the eastern sea-board of England, where it occurs annually. Further south and also on the west side it appears in smaller numbers and its visits are less regular.

It is rare likewise in the south of Ireland, though frequently seen in midwinter and in early spring off the north and north-west coasts.

In Scotland it is distributed all round the coast, including the large Island-Groups; indeed it is the most plentiful of the three species of Grebes which migrate to our Isles, but do not remain to breed.

Immature birds and less often adults in winter-plumage, are most commonly met with; a few have been recorded as occurring in full nuptial dress.

Among recent captures in breeding-plumage the following may be mentioned:—One, obtained April, 1898, at Barra in the Outer Hebrides; two shot out of a flock of six seen at Blacksod Bay, co. Mayo, on April 14th, 1895; a pair seen on Lough Swilly, in April 1893, by Professor Leebody, and a male found dead on Lough Foyle in June, 1893, by Mr. Campbell.

The haunts of the Horned Grebe in winter are generally in the smooth waters of bays and estuaries, and though storms may drive considerable numbers inland, yet their appearance on fresh-water lakes takes place too frequently to be accounted for only in this way.

Several instances are recorded from Lough Neagh.

Single individuals are generally met with; at times, however, half a dozen or so may be seen diving in large bays and sea-loughs. Mr. Warren, who has obtained several specimens in winter, tells me, that in Killala Bay he has usually seen these birds swimming in pairs.

Flight.—On the wing this Grebe may be distinguished from the last species by its smaller size and shorter wings; for it is a little larger than the Black-necked Grebe, for which it might easily be mistaken on the wing.

Voice.—The note is rather soft and may be syllabled *lib-lib*, or sometimes *chē-chē-chē*.

Food.—Fish form the chief diet, and the bird has a voracious appetite. As in the case of its congeners feathers are frequently swallowed, which may be found in the gizzard mingled with fish-bones and other indigestible substances.

Nest.—The nest, generally moist and in a state of decomposition, is an untidy structure composed of reeds and other water-plants. It either floats on the surface or is built up from the bottom of the lake.¹ The smooth deep waters of quiet sheltered lakes and ponds fringed with aquatic vegetation are the favourite breeding-haunts of this bird.

In colour and shape the eggs are like those of other Grebes, though often exhibiting when fresh a tint of bluish-white. As incubation proceeds they become stained yellowish-brown. Two to four generally constitute the clutch, which is laid about the first week in June. The nestlings are very carefully tended by their parents, the mother-bird often diving with them under her wing.

Geographical distribution.—Abroad, this Grebe, unlike its congeners, resorts chiefly to northern climes in the breeding-season. It nests in many countries of Arctic and Sub-arctic Europe (including Iceland, where it is common), Asia, and

¹ Mr. Coburn found this bird breeding abundantly in some districts in the north of Iceland, but none of the nests examined were "actual floating structures; they were built up from the bottom of the lake, until the surface of the water was reached. The commonest site was under a projecting mass of lava, without any surrounding vegetation, and the eggs could be distinctly seen a long distance away." Mr. Coburn has kindly allowed me to examine a fine series of nests, eggs, and young, which he obtained when on his expedition ('Zoologist,' 1901, p. 417).

² The evidences which from time to time, have been put forward to support the view that this species has bred in the British Isles, rest on too shaky a basis to admit of references.

America. The most northern occurrence on record is that of a bird taken on June 23rd, on the island of Jan Mayen (Saunders). In winter it journeys over Temperate Europe to the south of that Continent, but is scarce in the Mediterranean. Westward it reaches the Northern United States and has been traced as far as the Bermudas. Over the Continent of Asia it migrates to North India and the adjacent countries in that latitude, and east to Japan.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—In spring (not earlier than April), this Grebe develops a pair of great ‘horns’ or ‘tufts’ of golden-brown feathers which jut out from the sides and top of the head, giving the bird a most striking aspect; “the head (being surrounded, as it were, by a *nimbus* or aureole, such as that with which painters adorn saintly characters) reflecting the rays of light, and glittering with a glory that passes description” (Newton). Top of head, forehead, and chin, black; throat encircled with a ‘tippet’ of a similar colour; back, scapulars, wings, upper tail-coverts, and rump, dark brownish-black; back of neck, dark blackish-grey; front and sides of neck, upper breast, sides, and flanks, rich reddish-brown; lower breast and abdomen, white; under tail-coverts, dusky; secondaries, chiefly whitish, except the outer ones which like the primaries are dusky or ash-brown.

Adult female nuptial.—The head-garniture is not so highly developed as in the male, otherwise the sexes are similar in plumage.

Adult winter, male and female.—‘Horns’ and ‘tippet’ absent; lower throat and flanks, streaked with light grey; chin, cheeks, upper throat, breast, abdomen, and under tail-coverts, white.

Immature, male and female.—Resembles the adult winter-garb, but the breast and abdomen are brownish-white and there is a greyish shading on the cheeks.

BEAK. Blackish, white at the tip.

FEET. Dark olive or greyish-black, shading to pale slate-colour on the inner surface.

IRIDES. Red; narrow white rim round pupil.

AVERAGE MEASUREMENTS.

TOTAL LENGTH ...	...	13.5 in.	Female smaller.
WING ...	...	5.5 "	
BEAK ...	...	1 "	
TARSO-METATARSUS ...	...	1.75 "	
EGG ...	...	1.8 × 1.25 in.	

EARED GREBE. *Podiceps nigricollis* (C. L. Brehm).

Coloured Figures. — Gould, 'Birds of Great Britain,' vol. v, pl. 41; Dresser, 'Birds of Europe,' vol. viii, pl. 632. Lilford, 'Coloured Figures,' vol. vi, pl. 51.

Unlike the Horned Grebe, the Eared or Black-necked Grebe is a southern and south-eastern breeding-species, which on its vernal migration northward periodically reaches our coast. It also occurs though in less numbers as an autumn and a winter visitor.

This Grebe probably frequents the south and east coasts of England annually, and has been obtained in full breeding-plumage: northward, it becomes scarcer, though, according to Mr. Saunders, it is fairly common on the coast of Northumberland and can be traced to the Orkneys. It is of regular occurrence in winter on parts of the Welsh coast, north of which it is seldom recorded.

Among recent captures may be mentioned:—One shot near Great Yarmouth on October 7th, 1899 (A. Patterson, 'Zoologist,' 1901, p. 299); while a male and female supposed to have bred or have attempted to breed, near Banbury, Oxfordshire, were secured by Mr. O. V. Aplin, on September 22nd, 1899 ('Zoologist,' 1903, p. 10); one, an adult male in nuptial dress, captured alive on a pond near Lancaster on July 28th, 1904 (H. W. Robinson, 'Zoologist,' 1904, p. 350).

In the West of Scotland the only authenticated occurrences appear to be those of an adult on Loch Sunart in the spring of 1866, one in Skye in January, 1895, and a pair shot on the Nith (Saunders).

The Eared Grebe seldom visits Ireland. It has generally

been observed in winter and on the east coast, which it first touches on migration; but Kerry, Mayo, and Donegal, are not without records.

It resorts to inland as well as to tidal waters, indeed it is noteworthy that the first Irish specimen (recorded by Thompson) was taken on Lough Neagh in 1826. This extensive sheet of water, and other lakes have been visited by Eared Grebes. Three birds were recently taken in 1899, viz., one in Kerry in March, one in Wicklow in October, and one in Westmeath in October (Williams and Son); while examples have also been secured from:—Cork, Waterford, Wexford, Dublin, Mayo,¹ Louth, Armagh, Down, Antrim, and Donegal, in all about twenty-one records (Ussher).

The Eared Grebe in summer, may be distinguished from the preceding species by its much smaller head-ornaments; in the winter and immature plumages it is more difficult to identify; however, it is somewhat smaller, while its beak is slightly curved upwards. In other Grebes the beak is straight.

Flight.—In its general habits, its flight, and diving-powers, this bird in no wise differs from its congeners.

Voice.—The note is softer than that of other Grebes and sounds like *beeb*, *beeb*, or in the nesting-season a two-syllabled note is uttered sounding like *biddo* (Naumann).

Food.—Fish and crabs, also beetles (to which the bird seems partial), form the diet. Watters found the stomach of an Eared Grebe entirely filled with beetles which glittered among the feathers in which they were embedded. When the bird was captured two large beetles were found in the throat ('Birds of Ireland,' p. 221).

Nest.—Several observers have found the nest on tufts built up from the bottom of the water, situated on islets or on the margin of a lake. But in other situations it floats amid reeds, these in a state of decay forming the chief materials of the nest. In Algeria the late Canon Tristram observed this bird breeding in colonies so dense that some of

¹ Mr. Warren only met with one example on the Mayo coast during his long experience in that locality. This bird was shot in Killala Bay on February 6th, 1852.

Two specimens in full nuptial-plumage have been obtained in Ireland. One near Dublin on June 15th, 1847 (Watters), the other in the co. Armagh early in June, 1849 (Thompson).

the nests almost touched one another (Saunders). The eggs, three to five in number, characteristic in colour and shape, become stained as incubation proceeds, especially when laid in floating nests which are constantly in a state of moisture. The Eared Grebe may have bred in Norfolk, as a couple of downy nestlings have been obtained with an adult in full breeding-plumage (Booth, 'Rough Notes.')

In the 'Zoologist,' 1904, pp. 417-420, Mr. O. V. Aplin contributes an interesting article relating to the breeding of this species in the British Isles. He states that he has received satisfactory evidence that several pairs reared their young in Britain during the summer of 1904. On June 3rd, two pairs with their young were seen, and a few days later five pairs with young were seen. The discoverers, whom Mr. Aplin vouches are well known to ornithologists, prefer to remain anonymous, nor do they wish to divulge the name of the locality in which the birds were found with their offspring. The nature of the site is described as "a shallow lake about three-quarters of a mile in length. The surrounding ground is very marshy, and perhaps half the area of the lake itself is covered by beds of club-rush, bogbean, pondweed, and persicaria." The habits of the parent-birds and the young were carefully noted. In the 'Zoologist,' 1906, p. 315, Mr. Aplin, in a note, states that he visited the above breeding-haunts and observed through strong glasses, four or five adult Eared Grebes in full breeding-plumage.

It is not improbable that this species may have nested in several of the southern and eastern counties of England, where specimens from time to time have been obtained in full nuptial-dress. It is noteworthy, as pointed out by Mr. Aplin, that "parts of the British Islands lie within the geographical breeding range of this species."

Geographical distribution.—Abroad, in Southern Europe, North Africa, and Temperate Asia, eastward to the Pacific, the Eared Grebe nests freely; in Central Europe more sparingly. Its breeding-range reaches to about 55° N. lat. in some countries, notably Denmark and Prussia. Its winter-range extends to the shores of Central Africa, Arabia, and India, *i.e.*, about lat. 22° N.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, neck, and throat, black with a faint greyish gloss; a triangular patch of

elongated thin plumes, golden-brown in colour, is spread over the ears covering the back of the cheeks; base of fore-neck, chestnut-red; back, scapulars, and wing-coverts, dark brown; secondaries, almost entirely white; four inner primaries also exhibiting *much white*, a mark that distinguishes this species from the Horned Grebe; rest of primaries, chiefly brownish; breast, abdomen, and under tail-coverts, pure white; flanks and sides, dull reddish-brown.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—No ear tufts; chin, throat, and cheeks, white; ear-coverts, and front of neck, brownish-white; sides and flanks, white edged with greyish-brown; otherwise similar to the adult nuptial dress.

Immature, male and female.—Resembles the adult winter-plumage.

BEAK. Blackish, reddish at the base; upcurved near the tip.

FEET. Olive-green shading to blackish; inner surface, leaden-blue.

IRIDES. Crimson, with a narrow white ring round the pupil.

AVERAGE MEASUREMENTS.

TOTAL LENGTH...	...	12 in.	Female smaller.
WING ...	...	5 "	
BEAK ...	...	0.9 "	
TARSO-METATARSUS ...	...	1.5 "	
EGG ...	...	1.65 × 1.15 in.	

Allied Species and Representative Forms.—*P. californicus*, which closely resembles our bird but has hardly any white on the wings, is found in North America, though neither species frequents Greenland.

LITTLE GREBE. *Podiceps fluitans* (Tunstall).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 42; Dresser, 'Birds of Europe,' vol. viii, pl. 633; Lilford, 'Coloured Figures,' vol. vi, pl. 52.

The Little Grebe, though insignificant in size and but modestly attired even in the nuptial dress, is by far the

best known and most plentiful member of its Family. It has a wide distribution in the British Isles, and in winter it frequents coasts and estuaries as well as inland lakes, forsaking the latter when frost-bound for the open tidal water. It will often select for its 'natural habitat' ornamental waters and is a comparatively unsuspicious bird, showing little objection to human and other traffic. I have often seen it from the window of a passing train, swimming and diving unconcernedly in a reedy pond or dyke, quite close to the railway embankment in company with Water-hens and Coots.



FIG. 63.—LITTLE GREBE.

Its movements in the water resemble those of other Grebes; it can dive with remarkable speed, all the while using its wings and legs as organs of propulsion. Even the downy young, when just hatched, can swim and dive perfectly, but when danger threatens they seek the protection of their mother's back.

Flight.—The flight is rapid and appears to be more sustained than that of the larger Grebes; when alarmed the bird occasionally takes wing, but even then it will only flutter along the surface for a short distance, alight on

the water and dive. It will also wing its way from one lake to another, and at night sometimes flies round the coast.

Voice.—The Little Grebe may often be heard uttering a rather shrill, trilling sound like *wheet-wheet*, which is very far-reaching.

Food.¹—Besides small fish, water-snails, tadpoles, and insects, duck-weed and other aquatic vegetable substances are eaten, and in winter when on the coast this bird also consumes small marine shell-fish and worms. Feathers are generally present in the stomach.

Nest.—The popular idea that the nest floats freely in the water is quite erroneous. It is almost invariably attached to submerged stems or to adjacent sedges or reeds, and in shallow water is often built up from the bottom of the lake. It is a rude structure, composed of aquatic plants, and conveying to the untrained eye but little resemblance to a bird's nest. In fact before the eggs are laid it looks like a lump of refuse floating on the surface; when incubation has begun, it appears still less like a nest,² being raised in the centre by leaves or weeds, placed on the egg by the owner when she quits them and dives under water.

The eggs, three to six in number, are creamy-white and inclined to be pointed at both ends, but in many specimens one pole is distinctly larger and more rounded than the other.

Incubation generally begins in April or later,³ and during the process the eggs often become stained a deep brown from contact with decaying vegetation.

¹ Watters describes the habits of a Little Grebe of which he made a pet, as follows:—"When placed upon a tub of water it dived, and disported itself as well as its limits permitted, and captured, without any exertion, the minnow which had been placed for its food, at last becoming so familiar as to look upward when the fish was suspended by the tail, and diving after it when it entered the water; when lifted out it paddled along the floor in the most amusing manner, after every few feet traversed squatting down to rest; no way timid when placed on the breakfast table, it never attempted to move until taken away to enjoy its morning bath" ('Birds of Ireland,' p. 222).

² Once by mistake I shot a hatching Little Grebe. I took her to be simply resting on the water, so flat and sunken was her nest. The latter was dripping wet and contained three eggs. These were stained a deep brown, though only laid about four days. One egg was blown to pieces, another received two shot punctures, through which I expelled the contents, while the third escaped uninjured.

³ I have taken the eggs on July 8th, 1889, on Lough Neagh, and this bird is known to lay in August.

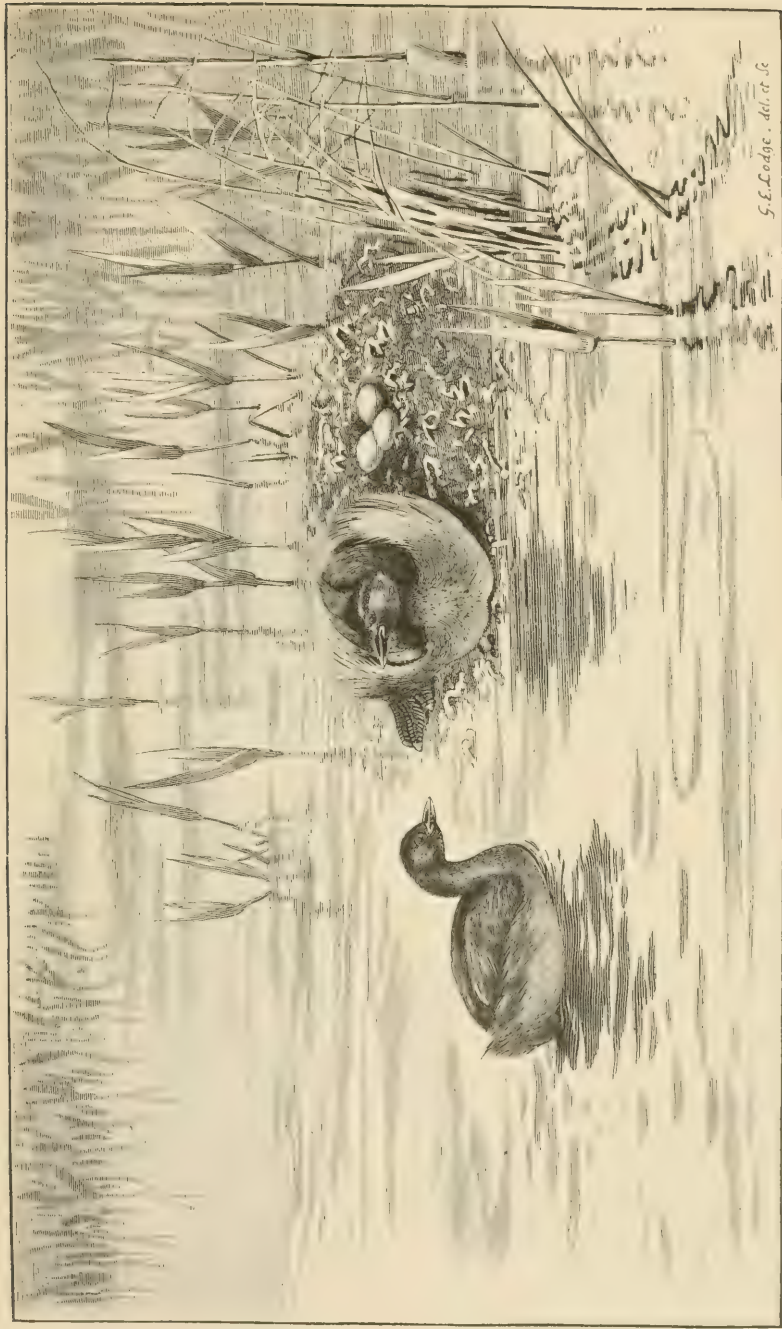


FIG. 64.—LITTLE GREBES AT THEIR NESTING-HAUNTS.

This bird breeds freely throughout the British Isles on sheltered lakes and ponds, both large and small, also along the margins of deep sluggish streams, overgrown with reeds and bulrushes. The nest may be situated far inland or near the coast, in the latter situation I have known the bird to breed about brackish ponds connected by a channel with the sea.

This Grebe is somewhat less numerous in the northern counties of Scotland, though it is noteworthy that it breeds at an elevation of 2,000 feet in some districts in the Highlands. It is also resident on some of the larger islands of the western sea-board of Scotland.

In Ireland it is a common breeding-species, and is abundant in summer along the Shannon and the great lakes passing through it.

Geographical distribution.—Abroad, the Little Grebe breeds in many countries in Central and Southern Europe, and in North Africa. Eastward it is generally distributed over Temperate Asia, breeding as far as Japan. It has not yet been recorded as nesting in Iceland, nor did Mr. F. Coburn find it in his recent expedition, though the Horned Grebe was very common. The breeding-range in Europe hardly extends north of the latitude of the Shetland Isles; in Central Europe the bird occurs chiefly as a summer-migrant, though resident in the south as well as in Asia and in North Africa.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Front and top of head, hind-neck, back, scapulars, and wings, dark bronze-brown; primaries, brown; outer secondaries, chiefly brown; inner ones, marked with white; cheeks, chin, and upper throat, blackish-brown; lower throat, sides and front of neck, and back of cheeks, rich chestnut; breast and abdomen, silvery brownish shading to greyish-white; flanks and rump, brownish, with an admixture of reddish-brown streaks.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Chin and throat white; cheeks, sides of head and neck, and upper breast, dull brownish-buff; lower breast and abdomen, chiefly silvery white with a brownish shading on the flanks, and a grey shading on the under tail-coverts; otherwise similar to the nuptial plumage.

Immature, male and female.—Resembles the adult winter-plumage, but the markings are less distinct, while the sides of the head are streaked with greyish-brown.

BEAK. Blackish-brown, with a greenish patch at the gape, and pale horn-colour at the tip.

FEET. Greyish-green.

IRIDES. Reddish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH ...	9.5 in.	Female slightly smaller.
WING	3.9 „	
BEAK	0.75 „	
TARSO-METATARSUS	1.3 „	
EGG	1.5 × 1.2 in.	

Allied Species and Representative Forms.—*P. philippensis*, with the rufous extending over the chin and throat, ranges from China to the Malay Archipelago; *P. capensis*, with more white on the wings than in *P. fluviatilis*, inhabits Madagascar and Africa, also India and Ceylon; *P. tricolor*, closely allied to our bird, but showing more extensive rufous marking on the face, inhabits Borneo, New Guinea and many of the smaller Islands in the Malay Archipelago; *P. novae-hollandiæ*, a bird much about the size of *P. fluviatilis*, but differing in several details, inhabits Australia, Java, and New Guinea; *P. dominicus*, smaller than our bird, is found in the Southern States, Mexico, Central and South America as far as Patagonia.

Note.—A specimen of the American Pied-billed Grebe, (*Podilymbus podiceps*), stated to have been procured near Weymouth, in January, 1881, was exhibited by Dr. R. Bowdler Sharpe at the meeting of the Zoological Society of London, on June 21st, 1881. The bird was little more than a nestling and still showed the long stripes on its neck. Mr. Saunders is of the opinion that it was probably an accidental exchange of specimens by the dealer, for he sold the bird as merely a Little Grebe.

Order TURBINARES.

Family PROCELLARIIDÆ.

STORM-PETREL. *Procellaria pelagica* (Linnæus).

Coloured Figures.—Gould, ‘Birds of Great Britain,’ vol. v, pl. 86; Dresser, ‘Birds of Europe,’ vol. viii, pl. 613, fig. 1; Lilford, ‘Coloured Figures,’ vol. vi, pl. 53; Booth, ‘Rough Notes,’ vol. iii, pl. 49.

The Petrels are very hardy birds, oceanic by nature, and only coming to land during the breeding-season, or when blown inland by severe gales. The Storm-Petrel, the most diminutive of sea-birds, is well known in its pelagic haunts to mariners and naturalists of travel, while those who have opportunities of visiting the islands which stud the western sea-board of Scotland and Ireland may meet with hundreds assembled together during the nesting-season.

Along the English coasts, however, this species is less plentiful, its distribution being restricted chiefly to the South-west, including Wales. Before May it is rare in British waters; in October old and young migrate southward, and during this movement lighthouses and lightships are frequently struck. A month later the seas and channels are deserted for the ocean-homes, though a few stragglers occur in midwinter, especially after boisterous weather, when they have been taken far inland.

This species was formerly much commoner on the east coast of England than it is at the present time. In the ‘Zoologist’ for 1901, p. 300, Mr. Patterson describes how hundreds were caught in the neighbourhood of Yarmouth by fishermen, who knocked them down with osier wands as they followed the herring-milts trailed behind the boats on pieces of string. In November, 1824, between two and three hundred were shot after a severe gale.

Flight.—The Storm-Petrel is chiefly crepuscular or nocturnal in its habits, especially at the breeding-haunts. After

twilight its dusky form may be seen flitting rapidly to and fro and reminding one not a little of a bat on the wing. But out on the ocean its characteristic little figure may be observed by daylight coursing over the crests of the waves and at times lightly tipping the water with its long slender feet dangling at full length. Such a movement gives one the impression that the bird is walking on the waves with raised and fluttering wings.

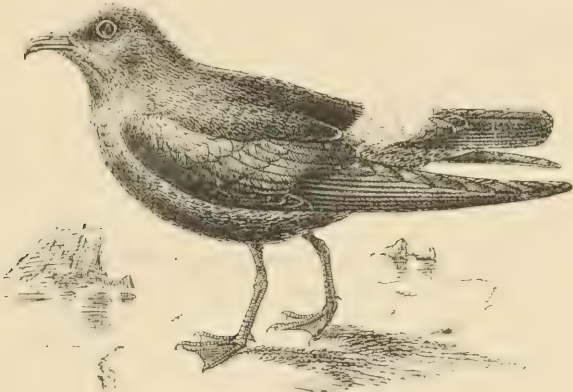


FIG. 65.—STORM-PETREL.

It seldom rises any height in the air and in boisterous weather will seek shelter in the trough of the mighty, rolling billow. Its flight is swift, graceful, and remarkably buoyant, full of twists and sudden swerves, and at a little distance the bird resembles a swallow 'hawking' for gnats, &c., low over the surface of the water. But if a Storm-Petrel, as it flits over the deep, be kept in view and brought up close with a powerful prism-binocular, it will be seen to move for the most part with a strong, steady and regular up and down beat of the wings, resembling a Tern in hurried flight.

Far out, perhaps a thousand miles from land, when no other bird-life is visible, the little Petrel, clad in its ominous brownish-black plumage, may be seen following in the wake of a great vessel. It may continue in its course for weeks, apparently not staying its flight from darkness to dawn. To the superstitious it is a bird of ill-omen, its presence o'er

the deep signifying an approaching storm, and indeed many a Jack-Tar, brave and stout-hearted in other respects, has been known to lose courage on sighting this harmless and interesting little creature. During wild weather, especially after stormy nights, it may be seen flying quite near the coast-land.

Voice.—In the breeding-season the Storm-Petrel utters a succession of twitters, especially if the nest be molested. The note of the hatching-bird sounds like *ti-tee-tick*, oft repeated (Harvie-Brown and Buckley).



FIG. 66.—LEFT FOOT OF STORM-PETREL. Nat. size.

Food.—Small fish, crabs, shrimps, shell-fish, cuttle-fish, and animal offal, especially fatty material, constitute the diet; oily substances in a state of semi-digestion are frequently to be found in the stomach. Floating offal is rapidly snatched from the water during flight, less usually the bird alights to feed. Mr. Ussher has observed numbers off the Kerry coast flying round the carcass of a large cetacean "in full daylight, as though they were desirous of picking up morsels of the carcass or oily matter" ('Birds of Ireland,' p. 385). Captive birds, though often very reluctant to feed, will, when pressed with hunger, eat morsels of fish from the hand.

Nest.—In May, Storm-Petrels assemble in large numbers at their breeding-homes, on rocky islands, preferably those strewn with loose boulders and clad to some extent with peaty soil. The birds are noisy, but, considering the numbers present, proportionately few are seen in the day-time as the majority are hidden in nooks and burrows where they are hatching. The nest is never placed in an exposed

situation though very different forms of cover are selected ; some birds resort to rock-crevices, others to disused rabbit-burrows, while numbers breed under masses of loose stones. In many instances the nest is at no great height from the sea-level, but in some localities it may be found several hundred feet high. The building-materials are scanty, consisting of bits of dry grass, sticks, and weeds ; in some instances a naked hollow scraped in the soil at the end of a burrow is utilised. The egg, one of which constitutes the clutch, is white, in many cases exhibiting a zone composed of fine red-brown specks near the larger end.

Incubation commences about the middle of June and lasts for thirty-five days : nestlings have been taken in September and October. The breeding-haunts smell strongly, the odour being derived chiefly from the oily gastric contents which are ejected from the mouth when the bird is pulled out of its hole.

The Storm-Petrel has many breeding-sites off the British coasts.

In Ireland thousands congregate on some of the islands off Western Kerry, including the Skelligs, Scariff, and the Blaskets ; while the islands off the coasts of Galway, Mayo, Donegal, Antrim, and probably other localities, accommodate colonies.

In Scotland it breeds in the groups of the large Western and Northern Isles, while recently it has been found nesting on the Bass Rock on the east side of Scotland (Eagle Clarke, *Ann. Scot. Nat. Hist.*, 1905, pp. 55-56).

In England a few pairs probably breed on an islet off Lundy Island, while there is a breeding-station also on the Scilly Isles.

In Wales there are several breeding-resorts, especially on the small islands off the coasts of Pembrokeshire.

Geographical distribution.—Abroad, it may be traced as a breeding-species from the Channel Isles southward along the French coast to the Mediterranean, as far east as Italy ; visiting the Canaries and migrating along the West coast of Africa, as far as Cape Town in winter. Northward it breeds in the Faroes, and visits in summer, Norway, Iceland, South Greenland, and the east coast of Canada.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—General plumage sooty-black ; forehead, breast, and abdomen, of a somewhat

browner shade; greater wing-coverts, thinly edged with white; rump and upper tail-coverts (excepting the tips), white, this colour extending to the sides of the vent; tail-feathers, sooty-black with white bases.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Brownish-black, with very little or no white on the tail or wing-coverts.

BEAK. Black.

FEET. Black.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	6·5 in.
WING	...	...	...	4·7 „
BEAK	...	...	...	0·6 „
TARSO-METATARSUS	...	...	...	0·9 „
EGG	...	...	...	1·15 × ·85 in.

FORK-TAILED PETREL. *Oceanodroma leucorhoa* (Vieillot).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 85; Dresser, 'Birds of Europe,' vol. viii, pl. 613, fig. 2; Lilford, 'Coloured Figures,' vol. vi, pl. 54.

This, also known as Leach's Petrel, and distinguished from the preceding species by its forked tail and larger size, is not uncommon in British waters after heavy gales from the North and West, which sometimes blow the bird far inland, and there are numerous records of examples being picked up dead or in an exhausted state.

Mr. Ussher describes how great numbers were blown across Ireland during the south-westerly gales which raged from the latter end of September to the middle of October, 1891. Specimens were then obtained in no fewer than eighteen counties, namely:—Kerry, Waterford, Clare, Limerick, Tipperary, Dublin, Kildare, Queen's County, Westmeath, Galway, Mayo, Leitrim, Cavan, Down, Antrim, Londonderry, Tyrone, and Donegal. "A number were seen flying about the Shannon in the neighbourhood of Limerick

on 27th September, coming, in their eagerness for food, close to the spectators, and at Banagher the birds were not only seen on the river, but in the town. . . . A correspondent, who enclosed one to Dr. Scharff from Moy, co. Tyrone, stated that dozens were lying about that place. It appears, therefore, that these birds were blown right across Ireland; but flocks, apparently of Fork-tailed Petrels, were still seen off the west coast in the middle of October. On the 14th of that month the lightkeeper at the Skelligs stated that he saw about two hundred Petrels which were larger than the Storm-Petrel, in flocks of about twenty or thirty (Migration Reports). At the same time flocks of Petrels appeared on the coasts of Wexford" ('Birds of Ireland,' pp. 387-388; *vide* also Barrington, 'Migration of Birds,' pp. 240 and 255).

The same gales blew numbers of Fork-tailed Petrels over Scotland and England, though Mr. Harvie-Brown did not find the birds increased to any appreciable extent in the Outer Hebrides,¹ as recorded by Mr. Evans in 'Ann. Scot. Nat. Hist., 1891,' pp. 74, 75. In ordinary calm weather this Petrel migrates in autumn and winter along the British coast, and specimens have also been secured in spring and summer. Though irregular in its appearance, and occurring only in limited numbers, yet it is a bird of wide distribution and has touched on almost all points of the coast-line. Bullock first discovered it as a British bird at St. Kilda in 1818 (McGillivray, 'British Birds,' p. 265).

Among recent captures may be mentioned:—A specimen picked up in an exhausted state in a field at Cadbury in Somerset, on November 30th, 1902. "As Cadbury is some twenty-five miles from the nearest point on the coast, the bird had doubtless been blown inland by the recent heavy gales, but whether from the Bristol or English Channel is uncertain, most probably, however, the former" (R. H. Reid, 'Zoologist,' 1903, p. 29). Another 'picked up' dead in the park at Beauport, Battle, Sussex, and identified on November 8th, 1905, by Mr. T. Parkin ('Zoologist,' 1905, p. 465). Another picked up near Douglas, Isle of Man,

¹ There have not been many records of this Petrel at any time from the Outer Hebrides. One was found dead at Barra on September 28th, 1897 (Ann. Scot. Nat. Hist., 1897, p. 151), while others have been seen flying between Barra and an island north of it.

on December 5th, 1905 (Ralfe, 'Zoologist,' 1906, p. 194). A fourth picked up in co. Fermanagh on November 28th, 1905 (C. Langham, 'Irish Naturalist,' 1906, p. 45).

In its general habits this Petrel resembles the last species; when not breeding it leads a wandering, pelagic life, flitting over the tossing billows and following in the wake of a vessel for many miles. Single birds or small parties are usually seen.

Flight.—Except for its forked tail this Petrel is not easily distinguished on the wing from the last species. The flight of the two birds over the ocean is practically similar. Mr. A. Williams observed six on the wing near Clontarf estuary, close to Dublin. He describes how they hovered with their heads to the wind, tipping the water with their tiny black feet ('Zoologist,' 1882, p. 18). Mr. Ussher mentions two that were seen, also flying against the wind for several hours, along the margin of a lake in Westmeath.

Voice.—The note resembles the syllables *pewr-wit*, *pewr-wit* (Saunders).

Food.—Refuse, chiefly of an oily character, together with cuttle-fish, small crabs, and shell-fish, constitute the diet. The stomach generally contains a rather transparent oil.

Nest.—In the breeding-season, in May, the Forked-tail Petrel exhibits the same gregarious propensities as the last species. It is fond of hiding in subterranean passages, and in daylight will suffer an intruder to pull it out of a burrow (its usual nesting-site), rather than take flight. It sometimes nests in rock-crevices, near the summit of precipitous islands.

The nest is a hollow, scantily lined with withered grass, or, in some cases, a naked depression in the soil. The single egg is white in colour, sometimes finely marked with reddish-brown specks forming a zone near the larger end.

Incubation commences early in June; an oily smell pervades the breeding-haunts.

This Petrel has been found nesting in several of the Island Groups off the western sea-board of Scotland, including St. Kilda¹ (where it has extensive colonies), North Rona and several Islands of the Outer Hebrides.

Mr. Ussher, in his work on the 'Birds of Ireland,' gives

¹ In Boreray it nests in the 'cleets' or little turf houses of the natives among the sods of dry turf (Harvie-Brown, Ann. Scot. Nat. Hist., 1903, p. 17).



R. Newhall, Photo.

FORK-TAILED PETREL.—NEST AND EGGS.
Boreray, St. Kilda.

an interesting account of eggs which were received from the Tearaght rock off the Kerry coast on July 1st, 1886, June 21st and 23rd, 1887, and July 6th, 1888. (*Vide* also Barrington, 'Migration of Birds,' Rep. 1889, p. 115.) On May 20th, 1889, another egg was taken on Inishnabro, a neighbouring island belonging to the Blasket group (*vide* 'Ibis,' 1880, pp. 11-12); while on August 13th, 1899, an egg much incubated was received by Mr. Barrington from an island off the Mayo coast.

It is not unlikely that this bird breeds on other islands, but its secretive habits render it difficult of observation.

Geographical distribution.—Abroad, this Petrel is widely distributed. To the coast of Norway it is a wanderer, but it has reached Iceland: storm-driven birds have been recorded from many countries of Central and Southern Europe, while southward some of the islands off the north-west coast of Africa are visited. Westward this bird is common off the eastern sea-board of Canada, migrating in winter over the North Atlantic to about lat. 35° N. It also occurs in Greenland. On the North Pacific coasts of the American Continent its breeding-range extends from California northward to Alaska; from thence it can be followed to the Kurile and other islands¹ off the eastern side of the Asiatic Continent. Japan is also visited. It seems that this Petrel, during its winter peregrinations, does not cross the Equator; in fact its southern limit is probably about lat. 25° to 30° N.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—General plumage sooty-black; head, throat, back, scapulars, and wings, with a slight plumbeous shade; wing-coverts and edges of the secondaries shading from greyish-black to ashy-grey; longer upper tail-coverts, white; shorter ones, sooty-black margined with white; tail, black and forked; under tail-coverts, whitish at the base.

Adult female nuptial.—Similar in plumage to the male.

¹ A specimen from the Kurile Islands, belonging to the late Mr. Seebohm's collection, and now in the British Museum, shows some white at the base of the outer tail-feathers, and along the outer web of the outermost feather; but in other respects resembles specimens from the North Atlantic (*vide* Cat. Birds Brit. Mus., vol. xxv, pp. 349-350).

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Resembles the nuptial plumage.

Nestling.—"The nestling being covered with long greyish-brown down, resembles a small long-haired mouse rather than a bird, as neither the wings nor the bill are visible" (Saunders).

BEAK. Black.

FEET. Brownish-black.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	8·5 in.
WING	...	...	...	6 "
BEAK	...	...	...	0·75 "
TARSO-METATARSUS	...	...	...	0·9 "
EGG	...	...	...	1·3 × ·9 in.

MADEIRAN FORKED-TAILED PETREL. *Oceanodroma castro* (Harcourt).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. ix, pl. 718; Lilford, 'Coloured Figures,' vol. vi, pl. 55.

There is but one British specimen of this Southern Petrel on record, namely a bird picked up dead on the strand at Littlestone, in Kent, on December 5th, 1895. It is in the possession of Mr. Boyd Alexander, who examined it in the flesh. This specimen was exhibited before a meeting of the British Ornithologists' Club on April 29th, 1896 (Saunders, *Man. Brit. Birds*, 2nd Edit., p. 731; also 'Ibis,' 1896, p. 401).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—This species may be distinguished from Leach's Petrel, which it resembles in colour, by its tail, which is much less forked; longer upper tail-coverts, white, broadly edged with black; tail-feathers (except the central pair), black, with white bases.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Resembles the nuptial plumage.

BEAK. Black.

FEET. Black.

IRIDES. Brown.

EGG. "Exactly like the egg of Leach's Petrel, white, with an indistinct zone of light red, and faint purplish underlying dots round the larger end" (Ogilvie-Grant, 'Ibis,' 1896, p. 54) : clutch, one.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	7	in.	Female larger.
WING	...	...	6.1	„	
BEAK	...	...	0.8	„	
TARSO-METATARSUS	...	...	0.82	„	
EGG	...	...	1.3	× .96	in.

Allied Species and Representative Forms.—The following list of Petrels with forked tails, which speaking generally are inhabitants of some part or other of the Pacific Oceans may here be included:—*O. macrodactyla*; *O. socorroensis*; *O. fuliginosa*; *O. melania*; *O. markhami*; *O. tristrami*; *O. homochroa*; *O. monorhis*; *O. hornbyi*; and *O. furcata*.

Sub-Family OCEANITINÆ.

WILSON'S PETREL. *Oceanites oceanicus* (Kuhl).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. viii, pl. 614, fig. 1; Lilford, 'Coloured Figures,' vol. vi, pl. 56.

Regarding the origin of this Petrel's name Mr. Saunders writes: "This remarkably long-legged Petrel was noticed and figured as *Procellaria pelagica* by Wilson (Am. Orn. vii, p. 90, pl. lx. fig. 6) under the impression that it was identical with the Storm-Petrel; but the earliest scientific description of it was given by Kuhl in 1820. In 1824 Bonaparte published a memoir on this and three more species,

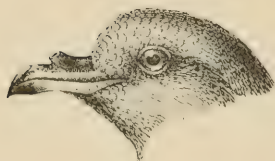


FIG. 67.

HEAD OF WILSON'S PETREL.

Nat. size.



FIG. 68.

LEFT FOOT OF WILSON'S PETREL.

Nat. size.

with the distinctive characters, measurements, and figures of each; and, in ignorance of Kuhl's name, proposed to call the bird *Procellaria wilsoni*, in honour of the distinguished ornithologist, whose name can, however, only be handed down to posterity in the trivial appellation." As a British bird, Wilson's Petrel has occurred on several occasions, yet it must be looked upon only as a rare and casual visitor to our Isles.

Among the earliest British records are those given by Gould, when numbers were seen off Land's End in May,

1838 (Proc. Zool. Soc., 1839) : Rodd, in his 'Birds of Cornwall, mentions the capture of another specimen in November, 1838, near Polperro, in Cornwall.

Wilson's Petrel has also been recorded from the following counties :—

Sussex ; one obtained (Bond, 'Zoologist,' 1843).

Wiltshire ; one picked up, November 2nd, 1849. (Marsh, 'Zoologist,' 1859).

Yorkshire ; one shot, November, 1874 (Eagle Clarke, Handb. Yorks., Vert., p. 85).

Cumberland ; three occurrences, the latest being in November, 1890 (Saunders, Man. Brit. Birds, 2nd Edit., p. 734).

Two examples have been taken at Freshwater in the Isle of Wight ; one in November, 1863 (Delme Radcliffe, 'Field,' November 28th, 1863, and 'Zoologist,' 1864) ; the other in the autumn of 1888 (Gurney, 'Zoologist,' 1889).

In Scotland there appears to be but one record, namely, that of a bird taken in a net after a gale on October 1st, 1891 (H. Evans, Ann. Scot. Nat. Hist., 1892).

Coincidentally, two specimens were secured in Ireland, these being the first well-authenticated occurrences. One, shot on Lough Erne,¹ co. Fermanagh, October 1st, 1891 (Williams, 'Zoologist,' 1891, p. 428) ; this specimen is preserved in the National Museum, Dublin. The second, an adult female, found alive in a field at Mossvale, co. Down, in an emaciated condition ; it died next day (R. Patterson, 'Zoologist,' 1891, p. 427).

Both these birds were blown inland by the great westerly winds which were then raging. Another specimen, the account of its capture resting on rather shaky evidence, is cited by Thompson (Nat. Hist. Irel., vol. iii, p. 417). The bird was supposed to have been taken in August, 1840, somewhere on the Irish coast, but the locality is not mentioned.

In its flight, selection of food, and other general habits, this bird resembles the Petrels already dealt with ; it is mainly a bird of the Antarctic Oceans, visiting its nesting-haunts towards the end of November, and laying its single egg in January or February. It breeds in colonies, building among large boulders or shattered rocks, in holes, and crevices. The egg is white, finely speckled with small spots

¹ Large sheets of inland waters should be carefully examined during and after heavy westerly gales, when ocean-birds are often driven out of their usual haunts.

of reddish-brown, like those of most other Petrels (Saunders, Phil. Trans., clxvii, p. 164).

Geographical distribution.—Wilson's Petrel has been found breeding on Kerguelen Island, by the Rev. A. E. Eaton; and examples of birds "were obtained by the 'Challenger' Expedition, off the Antarctic ice-barrier on February 14th, 1874" (Saunders). In summer it is common on some of the islands (notably the Azores) off the West African coast, from whence it can be traced in the South Atlantic down to the Cape, eastward over the Indian Ocean to Australia and New Zealand, and across the South Pacific to Chile and Peru. In the North Atlantic it is common along the American sea-board, visiting the West Indies and Mexico, and reaching about as far north as the latitude of the British Islands. In the Antarctic Ocean the geographical distribution may be said to be circumpolar.

DESCRIPTIVE CHARACTERS.

PLUMAGE. Adult male nuptial.—General plumage, sooty-black; forehead, breast, and abdomen, of a paler shade; greater wing-coverts and inner secondaries, edged with greyish-white; the primaries and the tail-feathers are more inky black than the rest of the plumage, but the bases of the outer tail-feathers are thinly edged with white; upper tail-coverts and thigh-patches, white.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Resembles the adult plumage.

BEAK. Black.

FEET. Black; proximal portions of the webs, yellow.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	7	in.
WING	...	...	6.1	„
BEAK	...	...	0.7	„
TARSO-METATARSUS	...	...	1.5	„
EGG	...	...	1.3 × 0.9	in.

Allied Species and Representative Forms.—*O. gracilis*, smaller, with the middle of the abdomen white, inhabits the west coast of South America.

FRIGATE-PETREL. *Pelagodroma marina* (Latham).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. ix, pl. 719;
Lilford, 'Coloured Figures,' vol. vi, pl. 57.

The Frigate-Petrel, a native of the Oceans of the Southern Hemisphere, has twice been procured off the British coast; once in England and once in Scotland, on both occasions after heavy gales. The first record is that of a bird washed ashore dead on Walney Island off the Lancashire coast in November, 1890. It was identified by the late Mr. O. Salvin, who obtained it from the late Rev. H. A. Macpherson ('Ibis,' 1892, pp. 602-604, *vide* also 'Fauna of Lakeland,' p. 457). The other example was taken alive on the Island of Colonsay on January 1st, 1897, and was identified by Mr. Eagle Clarke; it is now preserved in the Edinburgh Museum (Ann. Scot. Nat. Hist., 1897, p. 88).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, back of neck, and patch behind eye, dark slate-grey; over the eye a broad white stripe; back and scapulars, chiefly grey; wing-coverts, brown; primaries, brownish-black; rump and upper tail-coverts, chiefly light grey; tail-feathers, blackish, but greyish at the basal half; forehead, front of cheeks, throat, breast, and abdomen, white; sides of neck, flanks, and under tail-coverts, white, mottled with grey.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Resembles the adult plumage.

BEAK. Black.

FEET. Black; webs yellow, with a brownish edge.

IRIDES. Brown.

EGG. White, more or less finely spotted, and often zoned towards the larger end with dark red and purplish dots; in some instances equally spotted all over the shell, or entirely devoid of markings: clutch, one (Ogilvie-Grant. 'Ibis,' 1896, p. 52).

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	7.75 in.
WING	...	...	...	6.25 "
BEAK	...	...	...	0.9 "
TARSO-METATARSUS	...	...	...	1.6 "
EGG	...	...	...	1.35 × 1 in.

Family PUFFINIDÆ.

GREAT SHEARWATER. *Puffinus gravis* (O'Reilly).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 83;
 Dresser, 'Birds of Europe,' vol. viii, pl. 616, fig. 2;
 Lilford, 'Coloured Figures,' vol. vi, pl. 58.

The Shearwaters, like the Petrels, are oceanic in their distribution, and though often occurring not far from the coast, they very seldom land except at their nesting-haunts.

The Great Shearwater may be regarded as almost an annual autumnal visitor in varying numbers to the waters of the south coast of England, while it occurs more sparingly and less regularly off the east side.

Among recent captures may be mentioned a bird shot at Lowestoft, in November, 1898 (A. Patterson, 'Zoologist,' 1901); and another, a male, obtained on November 27th, 1902, near the mouth of the River Welland in Lincolnshire (F. L. Blathwayt, 'Zoologist,' 1903).

There are several recorded occurrences from Scotland, among which may be mentioned two specimens which were picked up dead; one in Skye, by the late Rev. H. A. Macpherson, July 13th, 1885; the other in Barra, July, 1899. In 1894, Professor Newton and Mr. Henry Evans observed about thirty to forty pairs between the Butt of Lewis and North Rona; and numbers were seen in June, 1895, between Barra and St. Kilda (Ann. Scot. Nat. Hist., 1900).

The Great Shearwater is a rather uncertain visitor to the Irish coast; it has been noticed chiefly about the South and West, and in autumn, but it has occurred in spring and summer. Most observations have been made from passing vessels, while a few birds have been taken on baited hooks, and two have been washed ashore dead (Ussher). A specimen caught alive in August, 1835, off Dungarvan, co. Waterford, appears to be the earliest recorded occurrence

(Thompson, Nat. Hist. Irel.); recently, four were shot, and from two hundred to three hundred observed between Cape Clear and Mizen Head on September 9th, 1901, by Mr. H. Becher, who also saw a large flock of this and the Sooty Shearwater, between the Blaskets and Skelligs on September 13th, 1901 ('Irish Naturalist,' 1905, p. 43).

This bird has also been recorded from the following counties:—Galway, Mayo, Sligo, Donegal, and Down.

To these may be added the record of numbers seen in June, 1896, about Rockall, a wild, wave-swept rock in the Atlantic Ocean, some 250 miles west of the Scottish coast.

On that occasion Mr. Jameson counted sixteen in one flock, while Mr. Barrington saw at least forty together within half a mile of Rockall. In fact, the birds were seldom seen in small numbers (Harvie-Brown and Barrington, 'Notes on Rockall Island and Bank,' Trans. Roy. Irish Acad., vol. xxxi.).

Flight.—This wandering ocean-bird is endowed with a remarkably buoyant and well-sustained flight. It may be seen skimming low with outspread and motionless pinions, following closely the undulations of the ocean's surface.

Its flight shows to the best advantage in fresh, rather than in perfectly calm weather, when the bird, coursing over the great rolling billows, dips into the troughs, out of which it glides, and then mounts the crest of a breaking wave, skirting the spray with quick and glancing turn. I have generally observed single birds or small parties on the wing, but far out in the North Atlantic I have seen as many as thirty bunched together, swimming alongside the vessel. Watters, in his 'Birds of Ireland,' mentions an instance of a Great Shearwater which had been captured alive, and though its wings were perfect and uninjured it never attempted to fly; and even when let fall from a height it dropped heavily on the ground. It showed an inclination to climb and several times mounted up the handle of a long spade.

Voice.—This species, like others of its kind, is no doubt noisy at night, especially in the vicinity of its breeding-haunts, but when roaming over the ocean I have not heard it utter any cry.

Food.—The Great Shearwater devours floating refuse, and is particularly fond of oily substances. Surface fish and other marine creatures, are preyed upon to a considerable extent, and when feeding the bird may suddenly alight and

then plunge under the surface in hot pursuit. It can dash under a wave with great speed, though apparently not diving deeply, and will take a baited hook, often being made prisoner in that way by fishermen. It may be seen assiduously beating to and fro over the sea like a sporting dog quartering a field for game (Warren). Cuttle-fish are said to be largely consumed.

Nest.—The nidification of the Great Shearwater appears at present to be shrouded in mystery; it is well-nigh certain, however, that it does not breed in the islands of the North Atlantic, especially on any of those adjacent to the British coast. Notwithstanding the large numbers seen during the Rockall expedition in June, 1896, the bird was seldom if ever noticed in pairs;¹ moreover an adult female shot on June 15th, 1896, and submitted to Dr. H. Gadow for dissection, showed by the condition of its generative organs that it had not laid any eggs, nor was it going to breed that season. Professor Newton noticed these birds chiefly in pairs on his way to the Faroes in 1894; he points to the general difficulty there is in finding the nesting holes of any species of Shearwater. . . . "We think all our data, so far, go to prove that the birds which frequent our seas are but wanderers over the North Atlantic for feeding purposes" (Barrington and Harvie-Brown, Notes On Rockall Island and Bank).

Geographical distribution.—The breeding-haunts are probably on Islands in the Southern Oceans, specimens of this Shearwater having been obtained in the Falkland Islands, Terra del Fuego, and near the Cape of Good Hope. During its travels the bird visits the coasts of Norway, Iceland, and the Faroes, and from May till about October is plentiful and widely distributed over a large tract of the North Atlantic Ocean. On the American side² it visits South Greenland, ranging southward along the eastern seaboard of Canada and the States.

¹ In August and September, in the North Atlantic, I did not notice it flying in pairs, and I kept it under observation with a strong prism-binocular for five consecutive days.

² On August 15th, 1906, I observed numbers of this, and a few of the next species some little distance outside the Straits of Belle Isle, lat. 52° N., long. 56° 20' W., North Atlantic.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Head and back of neck, ash-brown; neck, white, interspersed with a few spots of light brown; back, scapulars, and wings, ash-brown, the edges of the feathers being paler; upper tail-coverts, spotted brown and white; primaries and tail-feathers, chiefly blackish-brown; breast, white; abdomen, white, with brownish feathers interspersed about its middle and on the thighs; under tail-coverts, sooty-brown.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Resembles the adult plumage.

BEAK. Dark brown.

FEET. Pinkish-white.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	19·2	in.
WING	..	...	...	12·7	„
BEAK	...	...	...	2	„
TARSO-METATARSUS	...	...	...	2·25	„

Allied Species and Representative Forms.—*P. kuhli*, identical with *P. borealis* of Cory, is a closely allied species which is resident on many of the islands off the west coast of Africa. It visits the western coast of France and Spain, and is plentiful in the Mediterranean. The back and wings are much paler than in *Puffinus gravis*; the beak is yellow in colour and deeper in shape (Saunders).

SOOTY SHEARWATER. *Puffinus griseus* (J. F. Gmelin).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. viii, pl. 616, fig. 1; Lilford, 'Coloured Figures,' vol. vi, pl. 59.

The Sooty Shearwater is a rarer visitor to British seas than the last species, from which it may readily be distinguished by its uniformly dark colour and smaller size. Formerly it was regarded by some observers as the immature or a dark form of that bird.

In England it has been obtained off the coasts of the

following counties:—Cornwall, Devon, Dorset, Sussex, Norfolk, Yorkshire, Northumberland; and at North Berwick in Scotland.¹ Among recent captures may be mentioned:—Two adults—a male and female—shot October 2nd, 1901, off the coast of Scarborough, and two others, one a female, the other of doubtful sex, from the same locality, obtained respectively on October 1st and 4th, 1904 (W. J. Clarke, 'Zoologist,' 1901, p. 477, and *ibid.*, 1905, p. 74).

In Ireland the Sooty Shearwater has been obtained on four occasions and seen several times. A bird was procured off the Kerry coast (near the Little Skellig Island), in August, 1853, and identified by More ('Zoologist,' 1881); a second was taken off Bangor, co. Down, on September 29th, 1869; a third was obtained off Achill Island on May 22nd, 1901, and is in the Science and Art Museum, Dublin; and on September 13th, 1901, Mr. H. Becher shot four from among numbers of this and the last species between the Blaskets and the Skelligs; two of these he gave to the above Museum ('Irish Naturalist,' 1905, p. 43). Mr. Ussher, in his work on the 'Birds of Ireland,' p. 391, states that both Sooty and Great Shearwaters were seen on several occasions by Mr. Becher when yachting along the south-west coast of Ireland in September, 1899; again, in the 'Irish Naturalist' for 1901, p. 42, the same writer publishes a set of notes received from Mr. Becher, when cruising in September, 1900, off the coasts of Kerry, Cork and Waterford, where he found these birds "surprisingly numerous." Except for two days Sooty and Great Shearwaters were seen daily during a sail of seven days. On September 14th, ten or twelve Sooty Shearwaters were noticed, chiefly near the Fastnet Rock. On September 16th Mr. Becher estimates that he saw about half a dozen of both Sooty and Great Shearwaters, the birds "passing at intervals all day." The next day seven or eight Sooty and rather more Great Shearwaters, were seen. Again on September 9th, 1901, Mr. Becher met with about ten or twelve of this, and a flock of hundreds of the last species between Cape Clear and Mizen Head ('Irish Naturalist,' 1905, p. 43). The foregoing facts indicate that these two species of Shearwaters are more plentifully distributed along the south-western coast of Ireland than has been previously supposed.

¹ Recently, viz., October 16th. 1902, a Sooty Shearwater was captured in Stromness Harbour, this being apparently the first record from the Orkneys. (Eagle Clarke, Ann. Scot. Nat. Hist., 1903, pp. 25, 26.)

In its general habits, form of flight, and food, the Sooty Shearwater does not seem to differ materially from its larger congener.

Nest.—The nesting-habits have been observed on some of the islands (notably the Chatham group) off the shores of New Zealand. "According to the experience of Mr. Travers in the Chatham Islands, this species makes, in the peaty ground, a burrow which runs horizontally for about three or four feet and then turns to the right or left; while a slight nest of twigs and leaves at the extremity serves as a receptacle for the single white egg. From a series of measurements given by Dr. H. O. Forbes, the average appears to be 3 in. by 2 in. On the Island of Kapiti, off New Zealand, this species was found breeding in February and even as late as March. The male assists in the work of incubation, and the young birds, which are very fat, are esteemed a delicacy by the Maories, who also hold them over their mouths in order to swallow the oily matter which is disgorged. The old birds roost on the shore, and are very noisy during the night" (Saunders).

Geographical distribution.—Despite the fact that this Shearwater is plentifully distributed in summer over the North Atlantic and North Pacific, there is no evidence to show that it is other than a visitor from the Southern Oceans. As a wanderer it reaches latitudes even north of the British Isles, having occurred in the Faroes, while southward it visits the western sea-board of Europe. Westward it is generally distributed in the Atlantic along the coasts of Canada and the States, especially at the fishing-banks. In the North Pacific it may be traced as high as the Kurile Islands. It usually migrates north in our summer, returning in late autumn to islands in the Southern Oceans, as far as lat. 50° S., to breed during our winter and early spring months.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, neck, back, scapulars, and wings, deep brown, the feathers of the back being edged with lighter brown; primaries and tail-feathers, blackish-brown; throat and upper breast, ash-brown; lower breast and abdomen, dark ash-brown, the edge of each feather being darker than the centre.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Resembles the adult plumage.

BEAK. Dark brown, lighter at the base of the lower segment.

FEET. Blackish on the outer side, shading from hazel to purple-grey on the inside.

IRIDES. Dark brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH...	...	18 in.	Female smaller.
WING ... ..	...	12 "	
BEAK ... ..	...	2 "	
TARSO-METATARSUS	...	2.5 "	
EGG ... ..	...	3 × 2 in.	

MANX SHEARWATER. *Puffinus¹ anglorum* (Temminck).

Coloured Figures.—Gould, 'Birds of Great Britain,' vol. v, pl. 84; Dresser, 'Birds of Europe,' vol. viii, pl. 615, fig. 1; Lilford, 'Coloured Figures,' vol. vi, pl. 60.

The Manx Shearwater is common and widely distributed around our coasts, on seas adjacent to its breeding haunts, especially in spring and summer. However, it may be met with at other seasons of the year, and I have observed it in small numbers in midwinter (January), in the Irish Channel.

The curious figure of this bird as it skims over or dips into the troughs of the waves, coupled with its wide spread of wing, are points which serve to distinguish it easily from the Guillemot or Razorbill which it resembles in size and colour, and with which it often associates. At times it may be seen swimming, and even 'rushing' under water with outspread wings in an oblique direction, but I question if it goes very deep, though an immersion may last

¹ Ray confounded young Shearwaters from the Isle of Man with the young of the Puffin. Hence the origin of the generic name 'Puffinus,' which has been adopted not only for this but for other Shearwaters, and is, no doubt, misleading.

several minutes. I have never seen it take a distinct head-long plunge after the fashion of Auks and Cormorants. As a rule it is found scattered widely over the sea, but small flocks rest sometimes on the surface. Though strongly crepuscular and nocturnal, yet numbers may be seen together in the middle of the day.

Flight.—The aerial movements are familiar and characteristic. Five or six flaps of the wings in rapid succession are followed by a buoyant and graceful gliding motion, and one cannot fail to notice how, without apparent effort, the bird wheels from side to side on rigid and outspread pinions.

Voice.—The hoarse crowing uttered at the breeding-colonies and in the darkness of the night, sounds strange and weird. The first note may be syllabled *cūck*, the second varies from *kēck* to a loud *cācā*, after which there follows a slight pause, then a terminal double vowel-sound like *ō-ō* or *ō-ū*. Thus one might attempt to describe the voice syllables as *cūck-kēck-ō-ō* or *cūck-cācā-ō-ū*, usually repeated three times. I have never heard the bird utter any sound when roaming over the sea by day.

Food.—Floating offal, especially oily substances, and cuttle-fish form a considerable portion of the diet; small fish are also rapidly snatched up as the bird immerses itself immediately beneath the surface of the water.

Nest.—In spring, about the month of April, Manx Shearwaters congregate at their breeding-haunts, by far the greater numbers resorting to islands rather than to the mainland. They breed chiefly in burrows excavated to a considerable depth in the soft, turfy soil on the slopes of cliffs of varying altitudes. The Islanders off the Kerry coast informed me that by enlarging the burrows they could reach the sitting-birds, which they pulled out and despatched for food. The birds bite hard to defend themselves and their offspring. In some instances they do not enter burrows, laying in crevices or under large stones.

Grass is the chief material of which the nest is composed, and this, in some instances, appears to be carried to the burrows in a fresh and quite green condition (Aplin, 'Zoologist,' 1903, p. 213). In other cases the egg, white in colour, is deposited on the bare soil. Both birds share in the task of incubation, and it is generally believed that the males feed by day over the sea. The solitary young one (usually hatched about the middle of June) remains in the burrow dependent on its parents until some time after it is

fully feathered. It takes to the water early in August, having become very fat; this condition is manifest even in the downy stage.

There are several breeding-stations south of the Isle of Man, notably on the islands off Pembrokeshire, on Lundy, and on the Scilly Islands. It would appear that this species does not breed anywhere along the eastern side of Great Britain.

On many of the Scottish Islands, including the Inner and Outer Hebrides, the Orkneys, and the Shetlands, it nests abundantly.

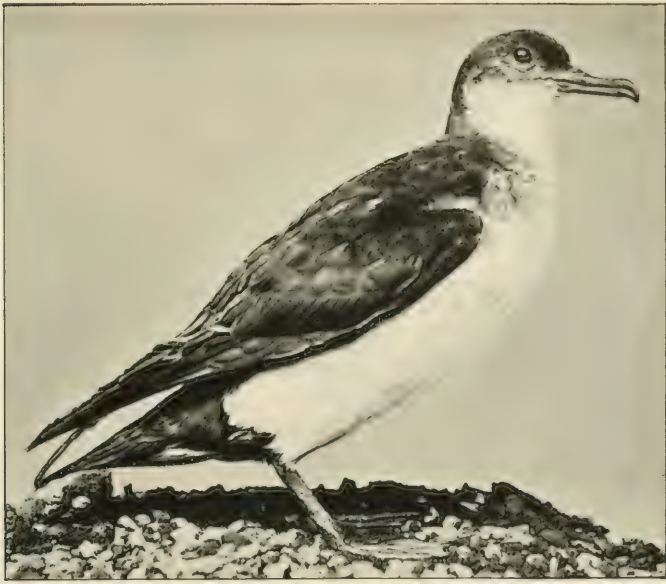
In Ireland, it breeds on many of the islands off the north, west, and south coasts, and more sparingly on the east side.¹

I found the Manx Shearwater extremely plentiful in summer off the Kerry coast, where the largest Irish colonies exist. Regarding its distribution as a breeding-species round the Irish coast, Mr. Ussher states, "There are probably many unknown breeding-haunts on remote spots, especially in the West, as a bird which never shows itself by daylight on land is difficult to discover; but as evidence of its general distribution in June and July, I may mention that during the cruise of Mr. H. Evans's yacht "Aster" in 1899 Mr. Barrett-Hamilton noticed some on every section of the Irish coast" ('Birds of Ireland,' p. 392).

Geographical distribution.—Abroad, the Manx Shearwater breeds on the Faroes, and is common in the south-west of Iceland; it may also be met with along the Norwegian coast and the North Sea generally. It is distributed over the Atlantic in summer, though along the American side it would seem that it is rare.² Southward it

¹ On May 15th, 1889, a man brought me a Shearwater which he pulled out of a hole on Bray Head, co. Wicklow. On dissection I found an egg ready for expulsion with the shell fully formed. This appears to be strong evidence that the bird was taken from its nesting-burrow, and it is a matter of regret that it was not captured some hours later when the egg would have been laid, and another breeding-locality added to the few on the mainland on the east coast of Ireland.

² Mr. Saunders' remarks (Man. Brit. Birds, 2nd Edit., p. 742) that he saw two birds, which might have been Manx Shearwaters, outside the Straits of Belle Isle, on August 13th—14th, 1884. On August 15th—16th, and on the return journey on September 3rd—4th, 1906, I passed through the Straits, outside of which were large numbers of Great Shearwaters, and not a few Sooty Shearwaters, but I failed to detect a single Manx Shearwater among their number.



MANX SHEARWATER.



FULMAR.

is found on many islands off the west coast of Africa, whence it can be traced across the Equator into the South Atlantic.¹

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, back of neck, back, scapulars, wings, rump, and upper tail-coverts, black; sides of neck and back of cheeks, mottled with ashy-brown; flanks, patched with brown; outer under tail-coverts, marked with brown externally; chin, throat, breast, abdomen, and rest of under tail-coverts, white.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Resembles the adult plumage.

BEAK. Blackish-brown, paler at the base; hooked at the extremity.

FEET. Flesh-colour; outer toes, darker.

IRIDES. Blackish-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	15	in.
WING	...	...	...	9.5	"
BEAK	.	...	...	1.75	"
TARSO-METATARSUS		...	...	1.75	"
EGG	...	...	...	2.4 × 1.65	in.

LEVANTINE SHEARWATER. *Puffinus pelagicus* (Acerbi).

The Levantine Shearwater, which inhabits the Mediterranean, and is the *amé damnée* of the Bosphorus, has been taken on several occasions off our coasts. The following captures may be mentioned:—One obtained at Torbay, Devon, August, 1875; a second from Plymouth Sound, about the same time. Both these are in the British Museum (Harting, Handb. Brit. Birds, 2nd Edit., p. 310).

¹ In the British Museum there is a specimen from Brazil, presented by Mr. Saunders (Cat. Birds. Brit. Mus., vol. xxv, p. 379).

A third, obtained from the same county, is now in the possession of Mr. J. H. Gurney; one obtained off the Northumberland coast by the late John Handcock; one taken off Scarborough, February 5th, 1899, and sent in the flesh to the British Museum (Saunders, Man. Brit. Birds, 2nd Edit., p. 742). A second from Scarborough obtained, September 13th, 1900 (W. J. Clarke, 'Zoologist,' 1900, p. 521); two more procured in the same locality in 1904, one an adult female, on September 17th, the other an immature bird on the 27th (W. J. Clarke, *ibid.*, 1905, p. 74).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Very similar in plumage to the Manx Shearwater, except that the top of head, hind-neck, back, scapulars, and wings are of a brownish shade, and the under tail-coverts and flanks are dusky-brown.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Somewhat resembles the adult plumage, but the abdominal feathers are dusky, not white, as in the immature of *P. anglorum*.

BEAK. Blackish horn-colour.

FEET. Light brown.

IRIDES. Dark brown.

EGG. White: clutch, one.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	15.25 in.
WING	...	...	...	10 "
BEAK	...	...	...	1.9 "
TARSO-METATARSUS...	...	...	...	1.9 "
EGG ...	...	...	...	2.3 × 1.6 in.

LITTLE DUSKY SHEARWATER. *Puffinus assimilis* (Gould).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. ix, pl. 720; Lilford, 'Coloured Figures,' vol. vi, pl. 61.

The Little Dusky Shearwater, which breeds on many of the islands off the west coast of Africa and is distributed over the Australian and New Zealand Seas, is only an

accidental wanderer to latitudes as far north as our Isles, from which it has been but twice recorded.

A bird was obtained alive off the Bull Rock, co. Cork. It "settled on the little sloop 'Olive' when it was passing the group of islands known as the Bull, Cow and Calf Rocks, off the western termination of co. Cork."

It was taken into Valentia Harbour on May 6th, 1853, and was presented to the Dublin Museum in 1894 by Mr. A. B. Blackburn, of Heaton Moor, Lancashire; it was originally described by Yarrell as the Dusky Shearwater, *Puffinus obscurus* ('British Birds,' 3rd Edit., vol. iii, p. 659), but on further examination by Mr. H. Saunders, it proved to be the Little Dusky Shearwater, *P. assimilis*. It was subsequently exhibited as such at the British Ornithologists' Club on March 16th, 1898 (Ussher, 'Birds of Ireland,' p. 395; also Watters, 'Birds of Ireland,' p. 268).

The other specimen was found dead near Bungay in Suffolk, about April 10th, 1858, having been driven inland by a gale. Its head was wounded, as though in its flight it struck something, perhaps a tree. It was exhibited before the Zoological Society of London, by the late Mr. O. Salvin, on May 16th, 1882. This example was also originally described as *P. obscurus*. It is preserved in the collection at Earsham Hall (Saunders, Man. Brit. Birds, 2nd Edit., p. 743; *vide* also Stevenson, 'Zoologist,' 1858).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top of head, back of neck, back, scapulars, wings, and tail, bluish-black; cheeks, chin, throat, sides of neck, breast, abdomen, and under tail-coverts, pure white; under wing-coverts also white; primaries, chiefly black, showing some white on the outer portion of the inner webs.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Resembles the adult plumage.

BEAK. Black.

FEET. Blackish; webs, yellow.

IRIDES. Blackish-brown.

EGG. Pure white: clutch, one.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	10.5 in.
WING	...	...	...	7.4 „
BEAK	...	...	..	1.4 „
TARSO-METATARSUS	...	...	...	1.5 „
EGG	...	...	...	1.9 × 1.35 in.

Allied Species and Representative Forms.—*P. obscurus*, widely distributed over the Tropical and Sub-tropical Seas, is more sooty-black on the back and wings than *P. assimilis*, and has the under tail-coverts blackish-brown edged with white, while the shorter central tail-feathers are white; its near ally, *P. persicus*, which inhabits the Persian Gulf, is browner on the back and wings, and possesses a longer and a thicker beak.

CAPPED PETREL. *Estrelata hesitata* (Kuhl).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. viii, pl. 618; Lilford, 'Coloured Figures,' vol. vi, pl. 64.

The Capped Petrel, which has been recorded chiefly from the West Indies, has on one occasion been obtained on British soil. The specimen was captured alive by a boy on a heath at Southacre near Swaffham in Norfolk, in March or April, 1850. "Although exhausted, it had strength enough remaining to bite the hand of its captor, who thereupon killed it" (Saunders). It came into the possession of the late Mr. Newcome, of Hockwold Hall, near Brandon, who skinned and mounted it (Newton, 'Zoologist,' 1852, p. 3691).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Top and back of head, blackish-brown; hind-neck, white; cheeks, greyish; back, scapulars, and wings, dark brown; upper tail-coverts, white; tail-feathers, whitish, broadly banded terminally with brown, except the central ones which are dark brown throughout; forehead, chin, throat, sides and front of neck, breast, abdomen, and under tail-coverts, white.

Adult female nuptial.—Similar in plumage to the male.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—"The immature bird is believed to be mottled with brown on the forehead and to be duller in tint on the upper parts" (Saunders).

BEAK. Black.

FEET. Dull yellow; distal portion of toes and webs, black.

IRIDES. Hazel-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	16	in.
WING	...	...	...	11·3	„
BEAK	...	...	...	1·75	„
TARSO-METATARSUS	...	...	...	1·5	„

COLLARED PETREL. (*Estrelata brevipes* (Peale).

Coloured Figures.—Lillford, 'Coloured Figures,' vol. vi, pl. 63.

A specimen of this Petrel, which is a native of the Western Pacific, breeding on the Fiji Islands and New Hebrides and wandering over the Southern Oceans to almost the Antarctic ice-barrier, lat. 68° S., was taken between Borth and Aberystwith at the end of November or beginning of December, 1889. It was described by the late Mr. O. Salvin, who exhibited it at a meeting of the Linnean Society on November 6th, 1890 ('Ibis,' 1891, pp. 411-414, with coloured plate).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Top of head, slate-grey; back, greyish; scapulars and wings, greyish with an admixture of brown; primaries, blackish; upper tail-coverts, grey; tail, blackish except the outer feathers which are shaded grey; forehead and throat, white; cheeks, mottled grey and white; a dark brown patch behind the eye; dark grey band across the upper breast, below which the breast and abdomen are light grey in some specimens, white in others; under wing-coverts and axillaries, white.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Resembles the adult plumage.

BEAK. Black.

FEET. Yellow, except the distal halves of all but the outer pairs of toes, which are black.

IRIDES. Brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	11.5 in.
WING	...	...	...	8.7 "
BEAK	...	...	...	1.3 "
TARSO-METATARSUS	...	...	...	1 "

BULWER'S PETREL. *Bulweria bulweri* (Jardine and Selby).

Coloured Figures.—Dresser, 'Birds of Europe,' vol. viii, pl. 614, fig. 2; Lilford, 'Coloured Figures,' vol. vi, pl. 62.

This Petrel, which breeds in the Madeira, Canary, and neighbouring Isles, and also inhabits the North Pacific Ocean, has on two occasions been captured on British soil. The first was found dead on the banks of the River Ure near Tanfield in Yorkshire, on May 8th, 1837 (Gould, 'Birds Of Europe,' 1837). The record of the capture subsequently became somewhat wrapped in oblivion until 1887, when Mr. Eagle Clarke carefully traced the specimen, and had it placed in the Museum of York (Proc. Zool. Soc., 1887, also 'The Naturalist,' 1888, and 'Zoologist,' 1888).

The other specimen, a male, was picked up dead on the shore near Beechy Head, Sussex, on February 3rd, 1903, after heavy south-west gales. It was exhibited at the British Ornithologists' Club (*vide* Bull. B.O.C., xcv, also N. F. Ticehurst, 'Zoologist,' 1903, p. 420).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial*.—Entire plumage brownish-black, with the feathers of the chin and greater wing-coverts edged with grey; tail, wedge-shaped.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature, male and female.—Resembles the nuptial plumage.

BEAK. Black.

FEET. Yellowish; webs, outer toe and distal portions of other toes, blackish.

IRIDES. Deep brown.

EGG. Pure white: clutch, one.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	11	in.
WING	...	...	...	7·7	„
BEAK	...	...	...	1·2	„
TARSO-METATARSUS	...	...	...	1·05	„
EGG	...	...	...	1·7 × 1·2	in.

Allied Species and Representative Forms.—*B. macgillivrayi*, with plumage quite uniform in shade, and possessing a stouter beak, inhabits the Central Pacific Ocean and Fiji Islands.

Note.—“Examples of the Petrel familiarly known as the Cape Pigeon (*Daption capensis*) are recorded by More from the neighbourhood of Dublin on October 30th 1881, by the Rev. M. A. Mathew from near Bournemouth (Zool., 1894, p. 396), and by Mr. Salter from the Dovey in 1879 (Zool., 1895, p. 254). This species belongs essentially to the southern hemisphere, and I am not aware that it has ever been proved to follow ships across the equator; but the ease and frequency of its capture with hook and line are notorious, and many birds have been carried hundreds and thousands of miles before being liberated. I do not believe that this species has ever wandered to the United Kingdom” (Saunders, ‘Man. Brit. Birds,’ 2nd Edit., p. 750).

FULMAR. *Fulmarus glacialis* (Linnæus).

Coloured Figures.—Gould, ‘Birds of Great Britain,’ vol. v, pl. 52; Dresser, ‘Birds of Europe,’ vol. viii, pl. 617; Lilford, ‘Coloured Figures,’ vol. vii, pl. 65; Booth, ‘Rough Notes,’ vol. iii, pl. 48.

This common oceanic species, abundant in the North Atlantic Ocean, is seldom seen in the immediate vicinity of

the British coast-lands, except in those districts adjacent to its breeding-haunts. It apparently does not frequent the waters which separate Great Britain from Ireland; even in tempestuous weather I have not noticed it in mid-channel in the Irish Sea. On the east side of England, however, it has been met with some thirty miles off the coast, especially near the fishing-grounds (Saunders).

Mr. Harting, in his 'Handbook of British Birds,' 1901, states that at least fifteen specimens have been obtained off Yarmouth, between October, 1878, and December, 1885 (Trans. Norf. Nat. Soc., iv, 1886, p. 223).

Off the Scottish coast, this bird is frequently seen, particularly about the North and North-west, where its breeding-haunts are at no great distance.

It is of rare occurrence round the Atlantic-facing shores of Ireland, and while, as Mr. Ussher points out, Mr. Warren has obtained several specimens off the coasts of Mayo and Sligo, the majority were water-logged and had been washed ashore dead, so that it is difficult to say at what distance from land they died.

In addition, the Fulmar has also been recorded from the following counties:—Donegal, Londonderry, Antrim, Dublin, Cork and Kerry. Moreover, there are exceptional instances of its having been shot or taken alive at no great distance from the coast (Thompson).

On August 10th, 1906, I observed this species about seven miles off the coast of Antrim, while later in the day when some eighty miles farther out, it was plentiful; in Trans-Atlantic voyages I have found it to be the most constant of oceanic birds in attendance on ships.

Fulmars may be seen to advantage from the deck of a steamer by taking up one's position about midship, and keeping a steady look-out to sea through a powerful binocular. As the birds glide backwards and forwards alongside the vessel, they constantly come into view, while a single individual, indulging in a series of circling manœuvres, may be kept for a considerable time within the field of vision.¹ Not only have I been able to follow closely the general movements, but in many cases have distinguished the form of offal or other food picked up.

Flight.—For the most part the flight is not unlike

¹ A prism-binocular with a wide field of vision is essential for this method of observation.

that of a Shearwater, six to a dozen beats of the wing being followed by a graceful glide on motionless and outstretched pinions, during which the bird often describes a complete circle.

In size, in colour, and in the occasional slow-flapping flight, the Fulmar bears a superficial resemblance to a Gull, but on watching the former for a little time, one sees that the flapping motion occurs at infrequent intervals, and is of brief duration, whereas the gliding movement, so characteristic, is very prolonged.

Food.—Like other Petrels, the Fulmar delights in a meal of offal, and it has a most voracious appetite. It accompanies fishing-vessels, and will take a baited hook,¹ becoming bold to a degree when the nets are being withdrawn, and approaching so closely that it can easily be struck with a stick. Whale-blubber² and oily substances are greedily devoured, and the bird is said to be fond of cuttle-fish. It usually settles³ on the water to pick up its food, though I have seen it lift a long ribbon-like piece of offal from the surface just before alighting.

Voice.—A soft note, which may be syllabled *re-re-re*, *ur-ur-ur*, is sometimes heard, but, on the whole, the bird is rather silent.

When the Fulmar is taken in the hand it vomits a quantity of clear, light brown oil; this, and the feathers are a source of profit to the people of St. Kilda, where the bird nests numerously; the flesh is also used by them for food.

Nest.—In May, this species comes to land for breeding-purposes; it is then gregarious, assembling in some places in colonies consisting of several hundreds. Some colonies are so densely crowded that every available spot on the cliff is occupied, and, as one might expect, much variety in the nesting-sites is to be seen. Thus the nest may be

¹ "Mr. Gurney has a barbed fish-hook 2½ inches long, with 28 inches of twisted cord, which was taken out of a Fulmar Petrel caught off Yarmouth in November, 1885" (A. Patterson, 'Zoologist,' 1901, p. 299).

² "It is well known to the whalers as a constant attendant on the stricken whale, feeding voraciously on the carcasses after the flensing operations have terminated" (Jardine).

³ I have observed a flock of about sixty alight on the water, crowd round and peck at the remains of a roast goose which had been cast overboard. Though closely packed when feeding, they were most peaceful in their demeanour, nor were they disconcerted when a Great Skua suddenly passed them with rapid sweep of wing.

found on a ledge, in the interstices of large, irregular rock-masses, or sometimes in a hollow in soft soil on the face or slope of a cliff. In many cases no building-material is used, the eggs resting on the bare soil or rock; but frequently dry vegetation and small fragments of stone form a lining.

Dr. Wigglesworth observed that "when the nest was placed amidst bare rocks, it was very usual to find the shallow cavity lined with these little flat pieces of stone, often mere flakes, which had obviously been collected by the bird; but when the nesting cavity was formed on the herbage-covered ledges and grassy slopes, the tendency to line the cavity with these flakes of stone was not so pronounced, although still apparent.

. This tendency, indeed, to line the nesting cavity with small fragments of stone seems to be the most characteristic thing about the Fulmar's nest" ('St. Kilda and its Birds,' pp. 64, 65).

The single egg is white in colour, marked in some cases with a few minute reddish spots. The shell is of a coarse granular texture, and has a peculiar, persistent, musky smell.¹

Incubation, in which both sexes take part, begins about the middle of April.

This species has many breeding-resorts round the north-west coast of Scotland, chief among which may be mentioned St. Kilda, where, in Soay especially, it nests in great numbers; in the Shetlands it has spread considerably of late years, as also in the Hebrides.

Mr. Eagle Clarke states that "the extension of the range of the Fulmar to Fair Isle and the Western and Northern Isles of Scotland, as well as to the north coast of the mainland, may be due to the congestion that has probably taken place in St. Kilda, which until a quarter of a century ago was its only native British habitat. During recent years the human population of St. Kilda has markedly decreased, and this, taken with the fact that the people are no longer dependent on the Fulmar for food to the same extent as formerly, has led to fewer of these birds being killed, and hence a considerable increase in their numbers would naturally result, and the seeking of new haunts

¹ Dried skins retain this odour for many years.



FULMAR ON ITS NEST.
Bantry, St. Kilda.

become a necessity" ('Birds of Fair Isle,' Ann. Scot. Nat. Hist., 1906, p. 80).

Geographical distribution.—Beyond our Isles the Fulmar breeds plentifully on the Faroes, in Iceland, and in several other Islands of Arctic and Sub-arctic Europe, Asia, Canada, and Greenland. In winter it migrates as far south as about lat. 40° N., frequenting both the European and American seaboard of the North Atlantic.

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, neck, breast, abdomen, and under tail-coverts, pure white, or shaded with grey; flanks washed with pale blue-grey or shaded with grey; back, scapulars, wings, and tail, light bluish-grey; primaries, dusky greyish-blue.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

*Immature, male and female.*¹ — Resembles the adult plumage.

BEAK. Yellow towards the tip, lighter on the sides, dark towards the base; nasal-tubes, greenish-yellow.

FEET. Greyish-brown; outer toes, darker.

IRIDES. Dark hazel-brown.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	19	in.
WING	...	...	...	13·25	„
BEAK	...	...	...	2	„
TARSO-METATARSUS	...	...	...	2	„
EGG	...	...	...	2·9 × 1·9	in.

Allied Species and Representative Forms.—There appear to be two races of the Fulmar, one in which the head, neck,

¹ According to Dr. Wigglesworth, the Fulmar in first plumage differs from the adult in having the general hue of the back and upper parts of the wings of a uniform bluish-grey, whereas in the adult many of the wing-coverts are shaded on their outer webs with light brown, which produces an irregularly shaped pattern on the wing, conspicuous in flight.

and under parts, are pure white, the other in which they are shaded grey. In Iceland, and on the western side of Davis Strait and Baffin Bay, the latter is chiefly to be found, while at Ovifak in Greenland, the former abounds. Both forms occur round Spitzbergen, but the grey-plumaged birds are in the majority. *F. rodgersi*, with only a light phase, and with the back and rump interspersed with white, inhabits Behring Sea, and *F. glupischa*, with pale-coloured nasal-tubes, the North Pacific. The latter has a light and a dark phase of plumage (Saunders).

Family DIOMEDEIDÆ.

BLACK-BROWED ALBATROSS. *Diomedea melanophrys*...	...	569
(Boie).

This bird, abundant in the Southern Oceans, and breeding on many of the islands of the Antipodes, has on several occasions wandered to latitudes even north¹ of the British Isles. But as a British species it has been only once recorded. An exhausted specimen was captured near Linton in Cambridgeshire, on July 9th, 1897 ('Ibis,' 1897, p. 625). "Mr. Southwell has neatly remarked that after all the species was only revisiting the haunts of its remote ancestors, for the bones of an Albatross of medium size, from the Suffolk 'red crag,' near Ipswich, have been described and figured by Mr. R. Lydekker" (Saunders).

DESCRIPTIVE CHARACTERS.

PLUMAGE. *Adult male nuptial.*—Head, neck, breast, and abdomen, white; over the eye there is a dark bluish-black stripe; scapulars and wings, very dark brown; middle of the back, light greyish-brown; tail-feathers, slate-grey, with white shafts; under wing-coverts, white; a wide greyish-black border extends along the edges of the wing.

Adult female nuptial.—Similar to the male plumage.

Adult winter, male and female.—Similar to the nuptial plumage.

Immature.—Resembles the adult plumage.

¹ It is interesting to note that north of our Isles this species has been recorded of recent years as follows:—(1) A specimen shot near Mygganaes, in the Faroes, in 1893, the bird having frequented that Island for some thirty or forty years (Saunders).

(2) An Albatross, probably of this species, observed about twenty miles off the Orkneys, on June 18th, 1894, and another shot at sea on the Faroe banks, about seventy or eighty miles south-west of Thorshavn in 1900 (Harvie-Brown).

BEAK. Light horn-colour, darker at the tip.

FEET. Yellow.

IRIDES. Light brown.

EGG. Creamy-white with light yellowish-brown spots : clutch one, exceptionally two.

AVERAGE MEASUREMENTS.

TOTAL LENGTH	...	...	...	29	in.
WING	...	...	...	19	„
BEAK	...	..	...	5·2	„
TARSO-METATARSUS			...	3·3	„
EGG	...	...	...	4·3	× 2·2 in.

APPENDIX.

*Species, additional to those mentioned in the text, recorded
as occurring for the first time in the British Isles.*

Order ANSERES.

Family ANATIDÆ.

BAER'S POCHARD. *Nyroca baeri* (Blanford).

An example of this Pochard was shot on Tring Reservoir on November 5th, 1901. Its skin was exhibited by the Hon. N. Charles Rothschild, at a meeting of the British Ornithologists' Club, held November 20th, 1901. From evidence adduced, it was in all likelihood a genuine wild bird (Bull. B.O.C., vol. xii, pp. 25, 26).

PACIFIC EIDER. *Somateria v-nigrum* (Linnæus).

An adult male Pacific Eider was shot at Graemsay, Orkney, in the early morning of December 14th, 1904, by a wild-fowler, named George Sutherland. It was seen in the flesh by Mr. Charles Oldham, and, when mounted, was exhibited by Dr. Bowdler Sharpe (on behalf of Mr. Frederick Stubbs who received it in the flesh from a Scarborough dealer on December 17th, 1904), at a meeting of the British Ornithologists' Club, held January 18th, 1905. This species had not been previously detected in European waters (Bull. B.O.C., vol. xv, p. 32; Ann. Scot. Nat. Hist., 1905, pp. 183, 184; 'Zoologist,' 1905, pp. 74, 142, 143, 185; 'Field,' February 4th, 1905, p. 190, and *ibid.*, February 18th, 1905, p. 277).

Order GRALLÆ.

Sub-Order FULICARIÆ.

Family RALLIDÆ.

INDIAN PORPHYRIO. *Porphyrio poliocephalus* (Temminck).

A specimen of this Porphyrio was shot in a meadow immediately adjoining a farm situated on Lyde River, a tributary of the Loddon, in Hampshire, on October 12th, 1899, by Mr. Henry Smallbone. It was exhibited by Dr. Sclater at a meeting of the British Ornithologists' Club, held October 22nd, 1902. It is believed to be the first record of the occurrence of this species in the British Isles, though *P. cœruleus* and *P. smaragdnotus* have already occurred (Bull. B.O.C., vol. xiii, pp. 17, 18).

ALLEN'S GALLINULE. *Porphyriola alleni* (Thompson).

An immature example of this Gallinule, a native of Africa, was captured alive on a fishing-boat, off Hopton, a village near Yarmouth, on the morning of January 1st, 1902, and was taken to Mr. Walter Lowne. Mr. J. H. Gurney is of the opinion that it was a wanderer from the South, and not an escaped fugitive from British aquatic preserves (J. H. Gurney, 'Zoologist,' 1902, pp. 98, 99, 150).

Order LIMICOLÆ.

Family GLAREOLIDÆ.

BLACK-WINGED PRATINCOLE. *Glareola melanoptera*
(Linnæus).

A male example of this Pratincole was shot near Jury Gap, Romney Marsh, on June 1st, 1903, by Mr. F. Mills. It was exhibited by Dr. Ticehurst at a meeting of the British Ornithologists' Club, held June 30th, 1903, and is now in the possession of Mr. Fleetwood Ashburnham, of Broomham Park, Sussex (Bull. B.O.C., vol. xiii, pp. 77, 78; N. F. Ticehurst, 'Zoologist,' 1903, p. 421).

Another specimen, an adult female, was shot in Rye Harbour, Sussex, on June 18th, 1903, by a man named Ransom, and brought to Mr. Bristow, at St. Leonard's. It was seen in the flesh by Mr. Ruskin Butterfield, and was exhibited by Lieut. Boyd Alexander at a meeting of the British Ornithologists' Club, held October 21st, 1903. At the same meeting, another specimen, an adult male, shot on Romney Marsh, on June 17th, 1903, by a man named Jones, was also exhibited. The last-named bird is now in the collection of Mr. Fleetwood Ashburnham, at Broomham Park, Hastings, and is additional to the one recorded in vol. xiii. of the 'Bulletin of the British Ornithologists' Club.' Thus three examples of this species, new to the British list, were obtained almost at the same time (Bull. B.O.C., vol. xiv, p. 17; W. Ruskin Butterfield, 'Zoologist,' 1903, p. 392).

Family CHARADRIIDÆ.

BAIRD'S SANDPIPER. *Tringa bairdi* (Coues).

An immature female example of this Sandpiper was shot at Rye Harbour, Sussex, on October 11th, 1900, and sent to Mr. Hartert by its discoverer and owner, Mr. Michael John Nicoll. It was seen in the flesh by Mr. W. Ruskin Butterfield, and was exhibited by Mr. Hartert at a meeting of the British Ornithologists' Club, held November 21st, 1900 (Bull. B.O.C., vol. xi, p. 27; M. J. Nicoll, 'Zoologist,' 1901, pp. 31, 32; 'Ibis,' 1901, p. 158).

Order TURBINARES.

Family PUFFINIDÆ.

MEDITERRANEAN SHEARWATER. *Puffinus kuhli* (Boie).

A female specimen of this Shearwater was picked up dead on the Pevensey beach, Sussex, on February 21st, 1906, by a man named Jenner. The bird was carefully examined in the flesh by Mr. W. Ruskin Butterfield, who exhibited it at a meeting of the British Ornithologists' Club, held March 21st, 1906 (Bull. B.O.C., vol. xvi, p. 71).

ADDENDUM.

WHITE PELICAN. *Pelicanus onocrotalus* (Linnæus).

In the 'Zoologist,' 1906, pp. 141, 142, the Rev. Francis C. R. Jourdain mentions that a White Pelican was shot in a field, close to the River Derwent, in Derbyshire, on November 4th, 1905; another has been observed frequenting the shore near Whitstable from July to October 20th, 1906 (S. Saunders, *ibid.*, pp. 431, 432).

COMMON BITTERN. *Botaurus stellaris* (Linnæus).

Two examples have recently been obtained in Ireland. One in co. Waterford, February 5th, 1904 (W. W. Flemming, 'Irish Naturalist,' 1904, p. 120); the other in co. Wexford, November, 1904 (J. H. Johnston, *ibid.*, 1905, p. 119).

AMERICAN BITTERN. *Botaurus lentiginosus* (Montagu).

A specimen of this Bittern was caught in a bramble-bush on Bryher, Scilly Isles, at the end of September or early in October, 1903. The capture was reported by Mr. Digby Pigott, on behalf of Mr. Dorrien Smith, at a meeting of the British Ornithologists' Club, held December 16th, 1903 (Bull B.O.C., vol. xiv, p. 32).

WHITE STORK. *Ciconia alba* (Bechstein).

An example of this rare British visitor was obtained at South Wootton, Norfolk, on May 19th, 1905 (J. H. Gurney, 'Zoologist,' 1906, p. 127).

GLOSSY IBIS. *Plegadis falcinellus* (Linnæus).

There appear to have been visitations of this species to Scotland during the autumns of 1902-3. A bird was obtained near Forres, October 2nd, 1902; another on Loch

Strathbeg, in Aberdeenshire, a fortnight later (W. Macleay, *Ann. Scot. Nat. Hist.*, 1903, p. 186); a third was obtained in Islay, October 30th, 1902 (C. Kirk, *ibid.*, p. 50); a fourth was obtained in Roxburghshire, November 17th, 1902 (A. Steel, *ibid.*, p. 49); a sixth was obtained in Stromness, Orkney, September 19th, 1903 (Eagle Clarke, *ibid.*, 1904, p. 127); a seventh was obtained on the Earn, near Perth, October 18th, 1903 (T. G. Laidlaw, *ibid.*, p. 55). In Ireland, one was obtained in Buttevant, co. Cork; another in Conna, October 1st (F. R. Rohu and Son, 'Irish Naturalist,' 1904, p. 98); a third from Belfast Lough, September 7th, 1906 (R. Patterson, *ibid.*, 1906, p. 236).

FLAMINGO. *Phœnicopterus roseus* (Pallas).

A Flamingo was shot on the coast of Merionethshire, on October 21st, 1898, by Mr. Caton Haigh ('Zoologist,' 1899, p. 29); another, supposed to have been released by the Duke of Bedford, was shot on the Wash, on November 22nd, 1902 (J. H. Gurney, *ibid.*, 1903, p. 136); while Mr. J. H. Gurney records one seen in Norfolk, in November, 1904, which may have escaped, but did not belong to the Duke of Bedford or to Mr. W. H. St. Quintin (*ibid.*, 1905, p. 89); another has been recorded as seen on the River Alde, Suffolk, on August 22nd, 1906 (J. Murie, *ibid.*, 1906, pp. 393-394, and J. H. Gurney, *ibid.*, p. 432).

LESSER WHITE-FRONTED GOOSE.¹ *Anser erythropus*
(Linnæus).

An adult female example of this Goose, which by some authorities is looked upon as a distinct species, by others as a representative form of *A. albifrons*, was shot near King's Lynn, Norfolk, on January 24th, 1900. It was exhibited by Mr. F. Coburn at a meeting of the British Ornithologists' Club, held October 23rd, 1901 (*Bull. B.O.C.*, vol. xii, p. 15; F. Coburn, 'Zoologist,' 1901, p. 317; J. H. Gurney, *ibid.*, 1902, p. 85).

¹ In the 'Zoologist' for 1902 and 1903, some interesting information will be found regarding the question of the validity of various species of 'Grey Geese,' and of their occurrence in our Isles, other than those which at present are admitted to the British List.

Two other occurrences, of less recent date, may here be mentioned:—A specimen shot in Northumberland in September, 1886, by the late Mr. Alfred Chapman ('Zoologist,' 1887); and another obtained in Somerset at a subsequent date (*ibid.*, 1888).

BEAN-GOOSE. *Anser segetum* (J. F. Gmelin).

A curious specimen of the Bean-Goose was shot at St. Abb's Head, Scotland, on February 25th, 1896. It was exhibited by Mr. F. Coburn at a meeting of the British Ornithologists' Club, held June 18th, 1902 (Bull. B.O.C., vol. xii, p. 81). In the 'Zoologist,' 1902, p. 442, Mr. Coburn states that there need be no doubt that this specimen is the Long-billed Carr-lag Goose, *A. paludosus*, of Strickland, which is said to have bred formerly in our Isles, but is now completely banished. The distinctive characters of this and the ordinary Bean-Goose are pointed out in Mr. Coburn's article.

CANADA GOOSE. *Bernicla canadensis* (Linnæus).

An adult and an immature male of this species were obtained in South Uist at the end of February, 1903, and sent to Mr. Bishopp for preservation. They were wary of approach, which points to the possibility of their being genuine wild birds (Donald Guthrie, Ann. Scot. Nat. Hist., 1903, p. 119).

MALLARD. *Anas boscas* (Linnæus).

In the 'Irish Naturalist,' 1905, p. 200, Mr. W. S. Smith records the occurrence of a Mallard's nest in a spruce fir-tree. The nest was about eighteen feet from the ground, nine eggs were hatched, and the young were safely removed.

PINTAIL. *Dafila acuta* (Linnæus).

In the 'Annals of Scottish Natural History,' 1906, p. 53, Mr. Thomas Henderson, Junr., mentions seeing a pair of Pintails with six young ones in Dunrossness, Shetland, on June 4th, 1905. It would appear that this Duck had not been known to nest previously in this locality.

RED-CRESTED POCHARD. *Netta rufina* (Pallas).

An adult pair of this species were shot on Thorpe Mere, Aldeburgh, Suffolk, on January 16th, 1904, by Mr. Frank G. Garrett, Junr. The birds were exhibited by Mr. F. M. Ogilvie at a meeting of the British Ornithologists' Club, held March 16th, 1904 (Bull. B.O.C., vol. xiv, p. 62; J. H. Gurney, 'Zoologist,' 1905, p. 90).

POCHARD. *Fuligula ferina* (Linnæus).

In addition to the counties mentioned in the text, this bird, according to Sir Herbert Maxwell, breeds in considerable numbers in Mochrum, Wigtownshire (Ann. Scot. Nat. Hist., 1901, p. 117).

TUFTED DUCK. *Fuligula cristata* (Leach).

In the 'Irish Naturalist,' 1905, p. 165, Mr. Warren mentions that the Tufted Duck has extended its breeding-range to Lough Conn, co. Mayo, where, in June, 1905, Mr. S. Scroope found a nest containing eleven eggs and saw several adult pairs.

EIDER DUCK. *Somateria mollissima* (Linnæus).

At a meeting of the British Ornithologists' Club, held April 12th, 1905, Mr. H. Saunders exhibited a male Eider Duck with a faintly indicated black V-shaped mark on the throat, characteristic of *S. v-nigrum*. The specimen was obtained at Holy Island, in January, 1898, by Mr. Abel Chapman (Bull. B.O.C., vol. xv, pp. 69, 70). At a subsequent meeting, held January 17th, 1906, Mr. Saunders exhibited another male specimen of the same Duck, showing a well-defined but not very black V-shaped mark on the throat. This bird was shot near Stromness, Orkney, on December 7th, 1905, and was sent by Mr. H. W. Robinson, of Lansdowne House, Lancaster (Bull. B.O.C., vol. xvi, p. 44).

KING-EIDER. *Somateria spectabilis* (Linnæus).

A male King-Eider was shot in Foreland Bay, off Donaghadee, co. Down, on November 10th, 1897, by Mr. W. H. Shaw (R. Patterson, 'Irish Naturalist,' 1901, p. 50); another, an adult female, was shot off Graemsay, Orkney, on February 21st, 1906, by Mr. S. Sutherland (H. W. Robinson, Ann. Scot. Nat. Hist., 1906, pp. 116, 117).

CAROLINA CRAKE. *Porzana carolina* (Linnæus).

An immature male of this species was obtained in Tiree, Inner Hebrides, on October 25th, 1901, by Mr. E. Lort Philipps, who exhibited it at a meeting of the British Ornithologists' Club, held November 20th, 1901. The specimen was examined by Dr. R. Bowdler Sharpe (Bull. B.O.C., vol. xii, p. 26 ; F. G. Gunnis, Ann. Scot. Nat. Hist., 1902, pp. 9, 10).

BAILLON'S CRAKE. *Porzana bailloni* (Vieillot).

A specimen of this Crake was obtained near Thurso in September, 1898 (W. Arkwright, Ann. Scot. Nat. Hist., 1899, p. 50).

WATER-HEN. *Gallinula chloropus* (Linnæus).

In the 'Field,' November 7th, 1903, p. 803, Mr. A. C. Smith mentions an instance of a Water-hen which was captured on a Dundee trawler sixty-five miles east of the Bell Rock.

GREEN-BACKED GALLINULE. *Porphyrio smaragdonotus* (Temminck).

A specimen of this Gallinule was obtained on Hickling Broad, Norfolk, on October 11th, 1902 (J. H. Gurney, 'Zoologist,' 1903, p. 135).

CRANE. *Grus communis* (Bechstein).

An immature Crane was obtained at the Pentland Skerries, about May 3rd, 1903 (James Tomison, Ann. Scot. Nat. Hist., 1903, pp. 186, 187).

GREAT PLOVER. *Edicnemus scolopax* (S. G. Gmelin).

A Great Plover was obtained at Towyn, Merionethshire, on January 6th, 1903, by Mr. D. W. Kirkley. This appears to be the first example recorded from North Wales (H. E. Forrest, 'Zoologist,' 1903, p. 154).

PRATINCOLE. *Glareola pratincola* (Linnæus).

A male example of this species was shot at Jury Gap, Romney Marsh, on May 30th, 1903, by Mr. Southerden. It was seen in the flesh by Dr. Ticehurst, who exhibited

it at a meeting of the British Ornithologists' Club, held June 17th, 1903 (Bull. B.O.C., vol. xiii, pp. 77, 78; N. F. Ticehurst, 'Zoologist,' 1903, p. 420). It would appear that this is the first record of the occurrence of the bird in Kent.

TURNSTONE. *Streptilas interpres* (Linnæus).

In the 'Irish Naturalist,' 1902, p. 221, Mr. R. Patterson states that on May 24th, 1902, he observed a small flock of Turnstones on Ram's Island, Lough Neagh; five of the birds were in full nuptial plumage. Again in the 'Irish Naturalist,' 1905, p. 165, Mr. E. L. L. M'Clintock mentions that on May 18th, 1905, he observed two of these birds in the same locality. It is unusual to find this species away from the coast, though in some districts it is known to resort inland for breeding purposes.

GREAT SNIPE. *Gallinago major* (J. F. Gmelin).

A Great Snipe was obtained in Shetland on September 26th, 1901, by Mr. J. Grierson, and was sent to Mr. Harvie-Brown (J. A. Harvie-Brown, Ann. Scot. Nat. Hist., 1902, p. 54); two others were shot on the Island of Stronsay, Orkney, on September 25th, 1901 (R. B. Bell, *ibid.*); a third was obtained in Orkney on September 12th, 1905, by Mr. R. B. Bell (*ibid.*, 1906, p. 54).

SABINE'S SNIPE. *Gallinago celestis*, var., *sabini* (Frenzel).

An example of Sabine's Snipe was obtained on an island off Mull, on November 26th, 1903 (W. A. Churchman, 'Field,' December 5th, 1903, p. 962).

BROAD-BILLED SANDPIPER. *Limicola platyrhynchos*
(Temminck).

An immature female example of this species was shot at Rye, Sussex, on August 29th, 1904, and was sent to Mr. Bristow, of St. Leonards. Its capture was reported by Mr. Nicoll at a meeting of the British Ornithologists' Club, held October 19th, 1904 (Bull. B.O.C., vol. xv, p. 12).

KNOT *Tringa canutus* (Linnæus).

At a meeting of the British Ornithologists' Club, held June 28th, 1905, Dr. Bianchi exhibited twelve authentic eggs of the Knot with nestlings, procured on the Taimyr Penin-

sula, and on the New Siberian Islands. In every instance the old birds were obtained, rendering identification certain (Bull. B.O.C., vol. xv, p. 92).

SPOTTED SANDPIPER. *Totanus macularius* (Linnæus).

A pair of Spotted Sandpipers were shot in a ditch between Lydd and Brookland in Romney Marsh, Kent, on May 5th, 1904. The birds were sent to Mr. Bristow, at St. Leonards, and were examined in the flesh by Dr. Ticehurst, on May 7th. The specimens were exhibited by Mr. J. L. Bonhote, on behalf of Dr. N. F. Ticehurst, at a meeting of the British Ornithologists' Club, held May 18th, 1904. This species had not been recorded previously from co. Kent (Bull. B.O.C., vol. xiv, pp. 84, 85).

WOOD-SANDPIPER. *Totanus glareola* (J. F. Gmelin).

A Wood-Sandpiper was obtained on the Island of Eday, Orkney, on September 1st, 1902 (C. S. Buxton, 'Zoologist,' 1902, p. 391).

SOLITARY SANDPIPER. *Totanus solitarius* (Wilson).

A specimen of this very rare American visitor was shot in Rye Harbour, Sussex, on August 7th, 1904, by a man named Peters, who sent the bird to Mr. Bristow, of St. Leonards, who mounted it. It was exhibited by Mr. C. B. Ticehurst at a meeting of the British Ornithologists' Club, held October 19th, 1904. This is the fourth occurrence in the British Isles of the species (Bull. B.O.C., vol. xv, p. 12).

SANDWICH TERN. *Sterna cantiaca* (J. F. Gmelin).

In the 'Irish Naturalist,' 1906, p. 192, Mr. R. Patterson records two new breeding-stations of the Sandwich Tern, both in the co. Down, one of which he visited on May 27th, 1906, and there found six or eight pairs of adult birds and one egg. On July 16th, following, he received from the second locality four eggs from Mr. S. M. Stears.

SABINE'S GULL. *Xema sabinii* (J. Sabine).

An immature male Sabine's Gull was obtained at Easdale, on the Argyllshire coast, on October 30th, 1903 (C. H. Bisshopp, Ann. Scot. Nat. Hist., 1904, p. 57).

WEDGE-TAILED GULL. *Rhodosthetia rosea* (Macgillivray).

At a meeting of the British Ornithologists' Club, held May 16th, 1906, Mr. H. E. Dresser exhibited eggs¹ of this species obtained by Mr. S. A. Buturlin on the delta of the Kolyma River in North-east Siberia. These were the first authentic eggs of this rare Gull which had ever been seen in the country (Bull. B.O.C., vol. xvi, p. 97, also *ibid.*, p. 41, and 'Ibis,' January, 1906).

LITTLE GULL. *Larus minutus* (Pallas).

A Little Gull was obtained near Lendalfoot, in the south of Ayrshire, on December 16th, 1902, by Mr. Charles Berry (John Paterson, Ann. Scot. Nat. Hist., 1903, p. 119).

GLAUCOUS GULL. *Larus glaucus* (O. Fabricius).

An immature example of this Gull, probably in its first year's plumage, was obtained at Moyview, co. Sligo, February 14th, 1905, by Mr. R. Warren (R. Warren, 'Irish Naturalist,' 1905, p. 71).

ICELAND GULL. *Larus leucopterus* (Faber).

An Iceland Gull, in the white phase of plumage² which immediately precedes maturity, was shot on the Moy estuary on April 26th, 1905, by Mr. R. Warren (R. Warren, 'Irish Naturalist,' 1905, p. 135).

IVORY GULL. *Pagophila eburnea* (Phipps).

A fine adult Ivory Gull was obtained at Broadford, Skye, about February 6th, 1901; it was sent to Inverness by Mr. James Ross (T. E. Buckley, Ann. Scot. Nat. Hist., 1901, p. 116).

¹ The reader's attention is drawn to a quotation inserted on p. 408 of the text with regard to the eggs of this Gull, which, when the article was written, were still undiscovered.

² The reader's attention is directed to a foot-note on p. 445 of the text, where I have stated that I have not seen the pure white phase of plumage in this Gull. This plumage is evidently not well known, thus in Cat. Birds Brit. Mus., vol. xxv, p. 296, Mr. Saunders remarked that of the white phase of plumage he had no certain knowledge, though it probably existed. The capture of Mr. Warren's specimen is therefore of considerable interest.

LITTLE AUK. *Mergulus alle* (Linnæus).

A Little Auk was taken alive in a field at Portmarnock, co. Dublin, in an exhausted state, on November 27th, 1904, (J. Trumbull, 'Irish Naturalist,' 1905, p. 44).

LEVANTINE SHEARWATER. *Puffinus yelkouanus* (Acerbi).

An example of this species, obtained at Bridlington Quay, Yorkshire, October, 1898, was exhibited by Dr. Bowdler Sharpe at a meeting of the British Ornithologists' Club, held February 21st, 1900. The specimen was sent for exhibition by Mr. Charles Smoothy, of Little Badow, near Chelmsford (Bull. B.O.C., vol. x, p. 48).

LITTLE DUSKY SHEARWATER. *Puffinus assimilis* (Gould).

A female example of this bird was picked up on the beach near Bexhill, Sussex, during a hard gale, on December 28th, 1900. It was examined by Mr. Hartert and Mr. Saunders. It was exhibited by Mr. W. Ruskin Butterfield at a meeting of the British Ornithologists' Club, held February 13th, 1901. On comparing it with the skins of *P. assimilis*, collected by Capt. Boyd Alexander, it was suggested by the Hon. N. Charles Rothschild and Mr. Hartert that the bird might be called *Puffinus obscurus bailloni*, rather than *P. assimilis* (Bull. B.O.C., vol. xi, p. 45). This is the third example obtained in the British Isles.

Another, a male of this species, was caught alive near Lydd, Kent, after a severe gale, on November 26th-27th, by Mr. Wallace who kept it alive for two days in a pool of water. The dead bird was received by Mr. Bristow, St. Leonards, on November 30th. It was exhibited by Mr. C. B. Ticehurst, on behalf of Dr. N. F. Ticehurst, at a meeting of the British Ornithologists' Club, held December 13th, 1905 (Bull. B.O.C., vol. xvi, pp. 38, 39). This is the fourth British-taken example.

BULWER'S PETREL. *Bulweria bulweri* (Jardine and Selby).

A female example of this Petrel was found dead on the beach near St. Leonards-on-Sea, on February 4th, 1904, after prolonged gales. The specimen was examined in the flesh by Mr. W. Ruskin Butterfield, who exhibited it at a meeting of the British Ornithologists' Club, held February 17th, 1904. This is the third British-taken specimen and the second for Sussex, *vide* p. 562, text (Bull. B.O.C., vol. xiv, pp. 49, 50).

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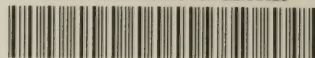
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